PAPER TRADE JOURNAL

DECEMBER 18, 1961

Bring Your Knife Slice & Duel It Out With Our Peripatetic Editor

How to Keep Construction Projects "On Schedule" & "Within Budget"

On Which Rung of the Salary Ladder Stand Our Top Execs?

Best Way to Proportion Control of Starch Flow to Paper Machine

Contents of the Week, pages 4-5

... without leaving the Sandoz Paper Laboratory, he works for a hundred mills

Paper coloring is the work of a specialist who knows the chemistry of dyes and pigments, and the chemistry of paper processes. Because many problems flow into the Sandoz paper laboratory, colorists there have the broad experience as well as the limitless color inventory needed to prepare a better formulation for your colored grades. See Sandoz about color. SANDOZ, INC., 61 Van Dam St., New York 13, N. Y. ALgonquin 5-1700. Offices: Appleton, Wis.; Charlotte 5, N. C.; Cincinnati 26, O.; Fair Lawn, N. J.; Hudson, Mass.; Los Angeles, Cal.; Philadelphia, Pa.; Portland 14, Ore.

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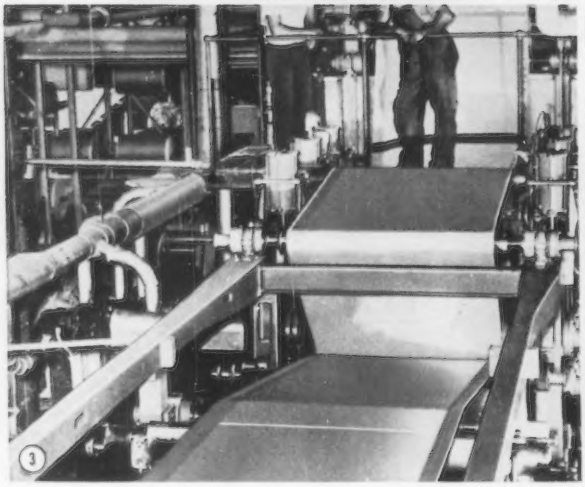
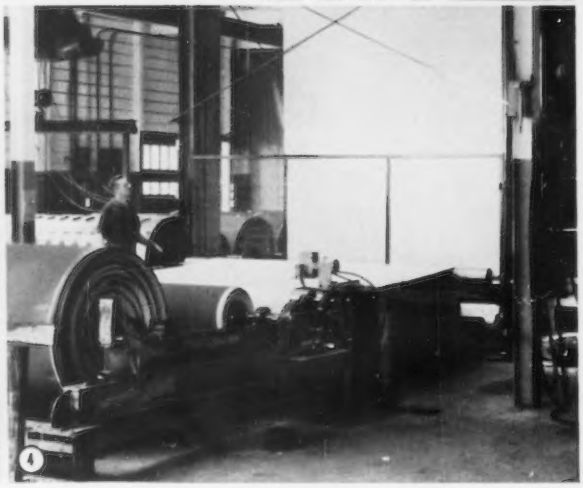




They're getting profit ideas on paper with Goodyear latices

Big news-makers in the paper industry are the special products being developed to do special jobs. Like making a stronger, more oil-resistant gasket. (1) Or toughening up tape. (2) Or making dielectric sheets more solvent-resistant. (3) Or printing full-color flooring patterns 100 times sharper. (4) And to do these jobs, paper manufacturers are turning to Goodyear latices.

Want to give your paper improved body, drape, strength and dimensional stability—greater flexibility and softness—outstanding resistance to wear and aging? Then Goodyear latex is the answer.

To simplify selecting them, Goodyear offers four basic types: PLIOLITE *Latex* in two forms (as a rubber or resin dispersion), PLIOVIC *Latex* (dispersion of vinyl copolymer resin), and CHEMIGUM *Latex* (dispersion of nitrile rubber). Each can be used alone—in combination with another—or as a modifier in your present materials. For the finest in technical help on latices, including the latest *Tech Book Bulletins*, write Goodyear, Chemical Division, Dept. L-9427, Akron 16, Ohio.

Lots of good things come from

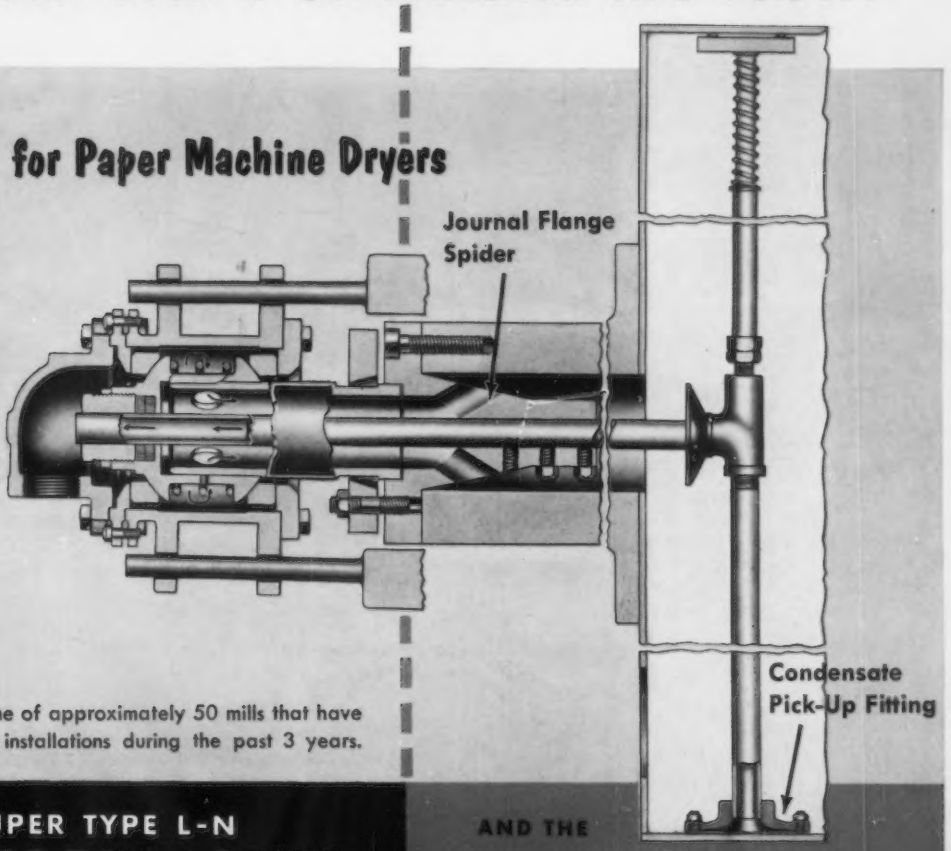
GOODYEAR

CHEMICAL DIVISION

Chemigum, Pliolite, Pliovic—T. M.'s The Goodyear Tire & Rubber Company, Akron, Ohio

You've never seen a Combination like this*...

for Paper Machine Dryers



* Unless yours is one of approximately 50 mills that have made tests and installations during the past 3 years.

SUPER TYPE L-N

JOHNSON JOINT with "Quick Release" Nipple

AND THE

NEW JOHNSON ROTARY SYPHON

Best Design Yet for getting steam into dryer rolls with rotating syphon pipes. Needs no lubrication or adjustment. Has only a few simple parts—less chance of trouble plus easier field servicing. Assembly plate provides ready access to syphon pipe.

Floating Action—Rod supports carry all the real weight, let the rotating assembly "float" freely inside. Adaptable for machines with open or enclosed gearing.

SUPER Construction...*and Stamina*—Teams rock hard "Green Streak" seal rings with special Ni-Chrome plating, slashes friction load and increases service life.

Easy on...and off—"Quick Release" nipple uses powerful wedging action to lock joint in place. Install it—or remove it—with just an end wrench.

Engineers' Data Book summarizes research behind this new development, has full technical information. Ask for copy of: "Condensate Behavior in Paper Machines."

Better Drainage of dryer rolls results from a new concept of condensate pick-up design. Holds condensate to a minimum. Rotary Syphon can be located any place along the dryer shell. Helps to reduce horsepower requirements.

Higher Roll Temperatures—Thinner condensate film means better transfer of heat units to dryer shell. Better drying can be translated directly into increased production.

Easier Installation—No need to get inside dryer to drill and tap dryer head. Install right through manhole. For rolls with handholes only there's even a journal-inserted rotary syphon.

Reduced Maintenance—Only a few simple trouble-free parts. Ends bearing wear caused by unnecessary water weight and prolonged "cascading." Easily removed for inspection.

Trial offer still goes. We'll gladly furnish a pair of Joints and Syphons for 90-day trial in your own mill, without cost or obligation. Ask for details.

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828 Wood St., Three Rivers, Mich.

Rotary Pressure Joints • Direct Operated Solenoid Valves

PAPER TRADE JOURNAL

PUBLISHED WEEKLY SINCE 1872

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Week of December 18, 1961
Vol. 145, No. 51

FEATURED THIS WEEK

Management Controls for Construction of a New Pulp Mill

How management followed engineering and job progress on the new bleached kraft pulp mill at Castlegar, B. C. Budget control is given special emphasis—F. B. Hertha **30**

How to Prepare and Proportion Starch to the Paper Machine Furnish

Best results with internal starch addition are obtained when the starch is cooked as needed at the machine. A circulating loop for cold starch slurry and a jet cooker provide the flexibility to meet these conditions —William G. Farin **36**

How Much Do You Know About Knife Slices?

A practical discussion of the operation of this type of slice, still much used on older and slower paper machines **39**

How Well Do We Pay Our Top Management?

Compensation is below the all-industry average except for those companies with a sales volume of $1.5 billion or better—Raymond F. Good **42**

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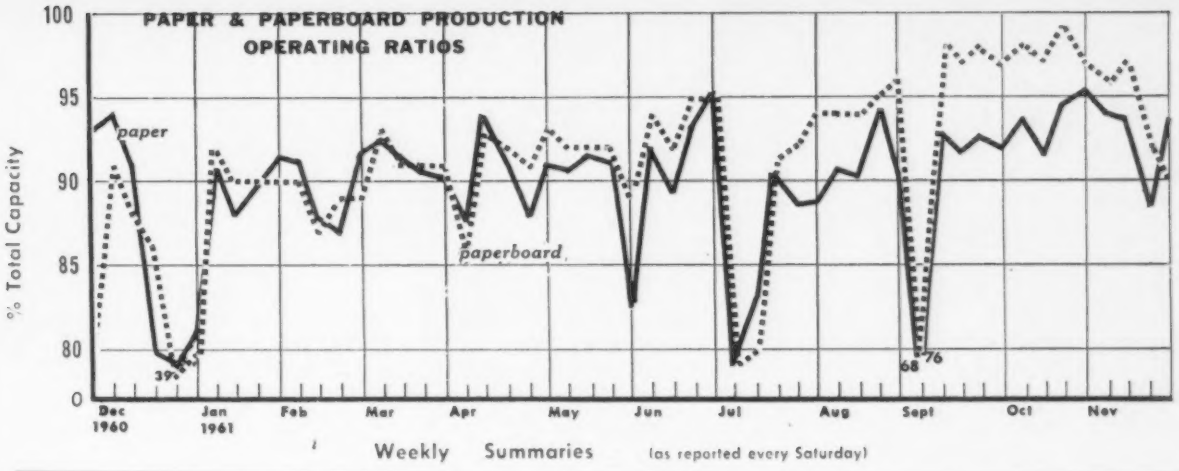

NEWS OF THE WEEK

New York Times Acquires Interest in Gaspesia Pulp and Paper Mill . . . Snowflake Mill Now Nearing Completion . . . Dow Jones Acquires Stock In West Tacoma Newsprint . . . Possible New Pulp Mill for New Brunswick . . . TAPPI Names Two Medal Winners for 1962 .....

Montmorency Names N. E. Pulp Sales Representative . . . Mannion Promoted to Shift Supt. at Grays Harbor . . . International Paper Names Industrial Engineer . . . St. Regis Selects Research Associates . . . Oxford Paper Announces Sales Staff Promotions .....

PCA Reorganizes Molded Pulp Division . . . Zimmer Paper Products Elects Officers . . . Wabash Fibre Box Promotes Two Terre Haute Men . . . Wacke Advances at Forest Products . . . Hinde & Dauch Names Regional Engineer .....

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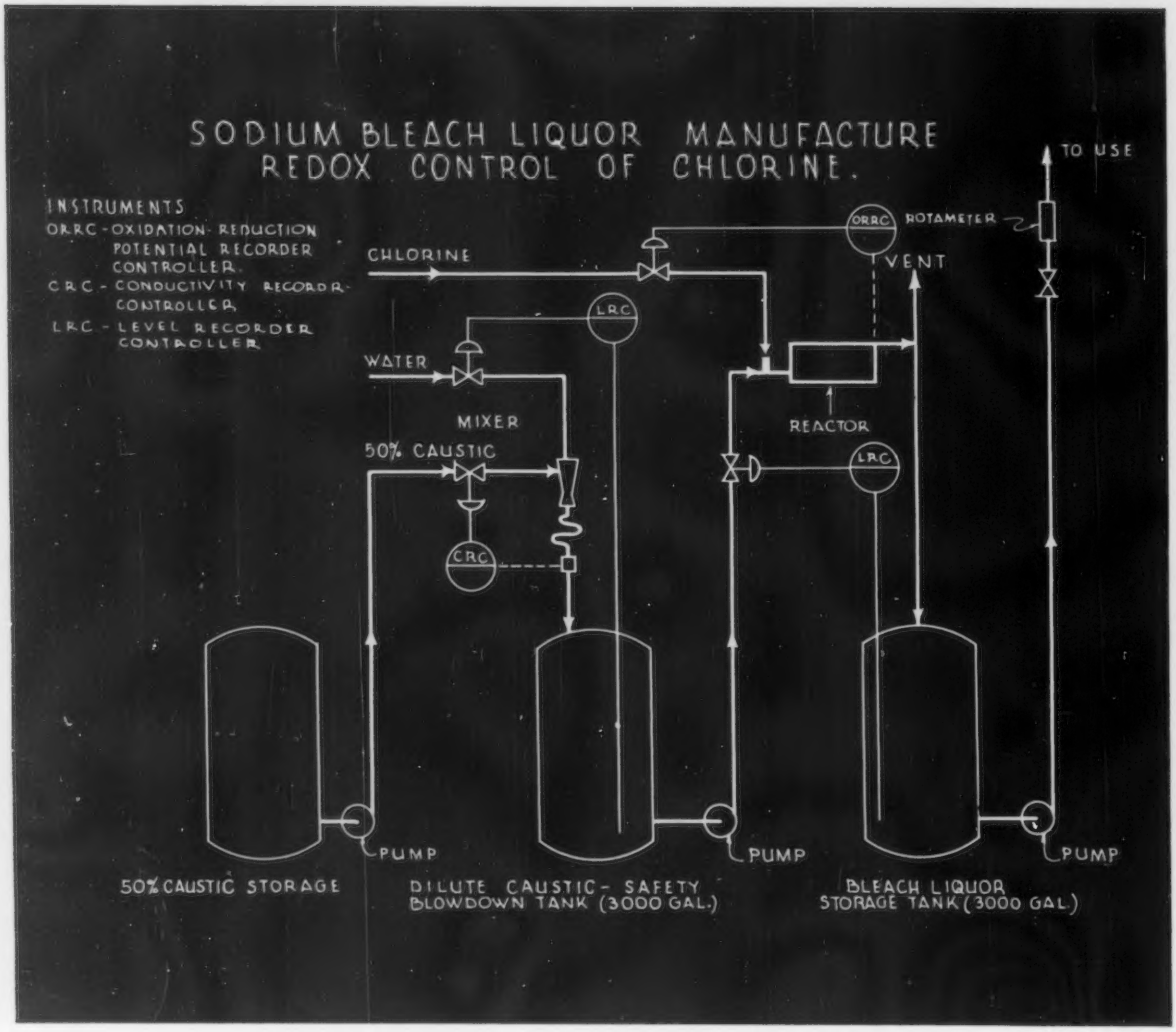
REMEMBER THESE DATES

CPPA Technical Section, Annual Meeting, Queen Elizabeth Hotel, Montreal, Canada

Paper Week, New York City

JANUARY 22-26

FEBRUARY 19-22



How to make bleach liquor automatically and continuously

With this simple Hooker system you can produce sodium hypochlorite* continuously and automatically. Control of bleach-liquor composition is automatic, resulting in more uniform bleach and an improved final product.

Chemical costs are at a minimum, because excessive chemical usages are eliminated. Labor costs are also at a minimum, since the plant operates automatically and requires only occasional supervision. Installation costs are lower, because large reaction and storage tanks are not needed.

How the System Operates—50% caustic soda and dilution water are metered to a caustic-dilution tank. A level-controller adjusts the flow of water to match the rate of withdrawal of bleach from the unit.

A conductivity controller meters the 50% caustic solution to maintain a constant dilute caustic concentration (3-5%).

Dilute caustic soda solution is pumped through a custom-designed Hooker reactor, of which there are several types, and combines with chlorine to form soda bleach.

The flow of dilute caustic is controlled by a level-controller in the bleach-liquor storage tank, while the chlorine addition is controlled by the oxidation-reduction recorder controller.

If you need relatively large amounts of 30-to-40-gram-per-liter available-chlorine bleach liquor on a continuous basis, this Hooker system can cut your costs by a considerable margin while giving you the top quality you want. For more information on this process, write for Bulletin No. 251, "Continuous Bleach Liquor Manufacture."

*A similar system with a modified reactor is available for calcium hypochlorite.

HOOKER CHEMICAL CORPORATION

HOOKER CHEMICALS PLASTICS

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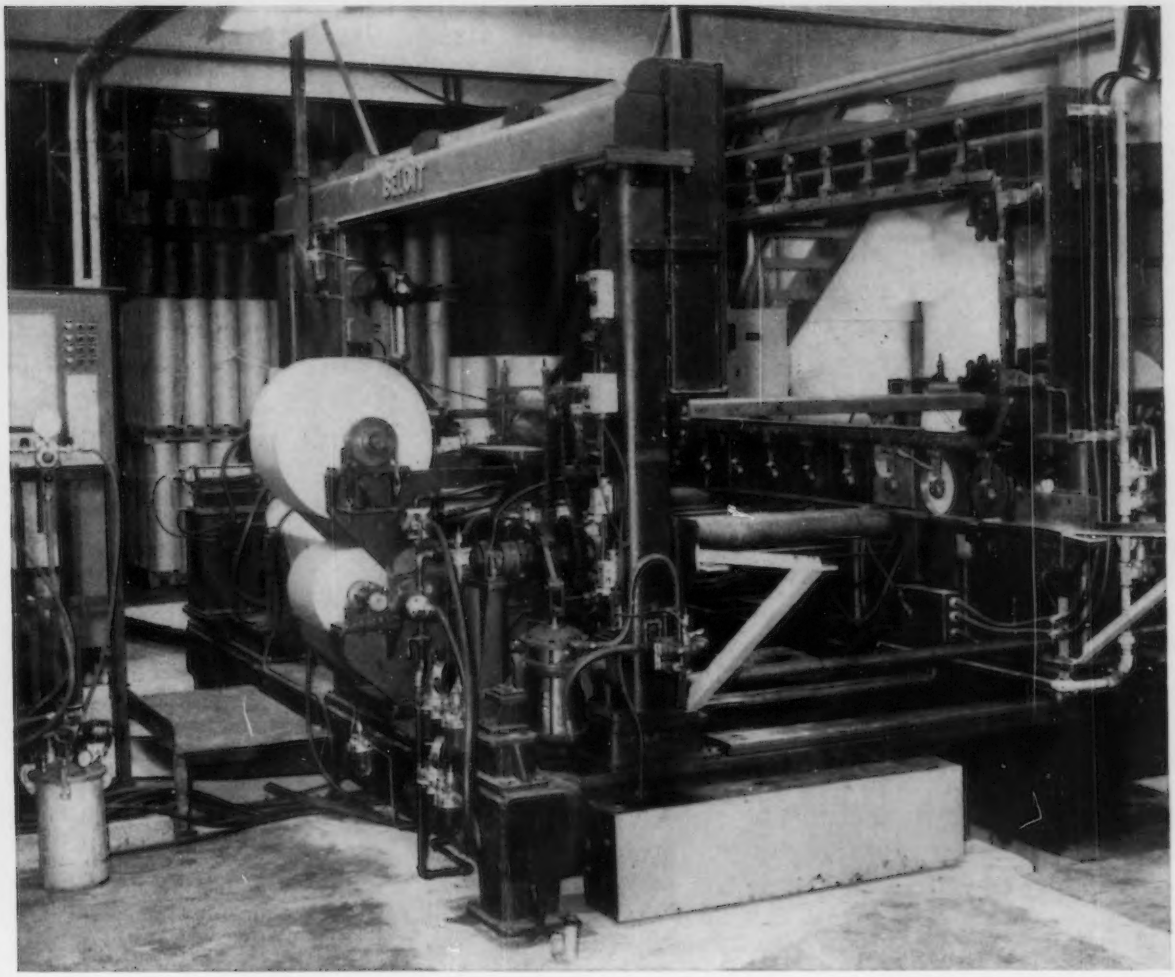
Sales offices: Buffalo, Chicago, Detroit, Los Angeles, New York, Niagara Falls, Philadelphia, Tacoma, Worcester, Mass. *In Canada:* Hooker Chemicals Limited, North Vancouver, B. C.



E. R. CHRISTENSEN

International Paper Co., Mobile, Alabama

Beloit counter roll wrapper

Compact, well-engineered unit puts counter roll wrapping on a completely automatic basis. A Beloit counter roll wrapper can be arranged to handle counter rolls of any size. Consider these important features:

• plugs, wraps, crimps and glues automatically • wrapper sheets automatically cut from a single parent roll • end covers die cut and applied from a single parent roll • neat, uniform customer rolls • reject arrangement for nonstandard rolls • speed range of ten rolls per minute

FINISHED PRODUCT PROCESSING EQUIPMENT

Winders • Reclaim Winders • Cutters
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Tru-Tension Controls • and other
equipment for the paper and
allied industries.

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Six questions
to

embarrass

any
compression
strapping
machine
salesman

(except ours)

1 **How big is the press?**
The effective upper platen width on the Acme Steel E50 Strapping Press is a full 76". And there's a full 65" front to back in the lower platen.

2 **How many ways can I feed straps?**
Acme Steel designed the E50 for feeding front to back by power and/or hand. One or more powered strap feed units and tracks can be placed at predetermined locations. Or, you can hand feed to apply strap on a 4" cleat at any location.

3 **Can I run flat bottom units, double faced pallets and narrow skids into and through your machine?**
The E50 Strapping Press permits unobstructed flow of all type units. It even handles small skids with space as little as 16" between runners.

4 **What height skids will your machine handle?**
The E50 has a full platen opening for skids 30" to 86" high. What's more, the standard upper platen grid provides proper pressure on narrow cleats and close spacings in both directions.

5 **Can I strap in any pattern?**
The Acme Steel feed system and construction of the upper platen gives you maximum flexibility. You can place straps in both directions for all size skids.

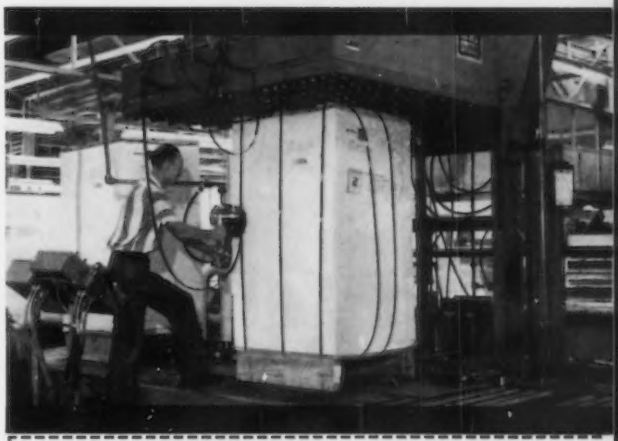
6 **How do I properly align conveyorized skids to power feed strap through notches in runners?**
The Acme Steel system for conveyorized wrapping and compression strapping skids of paper utilizes a special inexpensive conveyor. It positions the skid so strap can be power fed quickly and smoothly.

Get all the frustrating facts!

Call your Acme Idea Man, or return the coupon, for full details on the Acme Steel E50 conveyorized wrapping and compression strapping station. It's made by the people who pioneered and perfected compression strapping for the paper products industry. It's the machine that incorporates the experience of over 200 successful installations throughout industry—all Acme Steel, of course.

ACME STEEL

IDEA LEADER IN
STRAPPING



Acme Steel Products Division, ACME STEEL COMPANY
Dept. PJS-121, 135th Street & Perry Avenue, Chicago 27

☐ Please send full details on the features that have made the E50 Strapping Press the most successful wrapping and compression strapping machine in the field.
☐ Have Acme Idea Man call.

Name_____

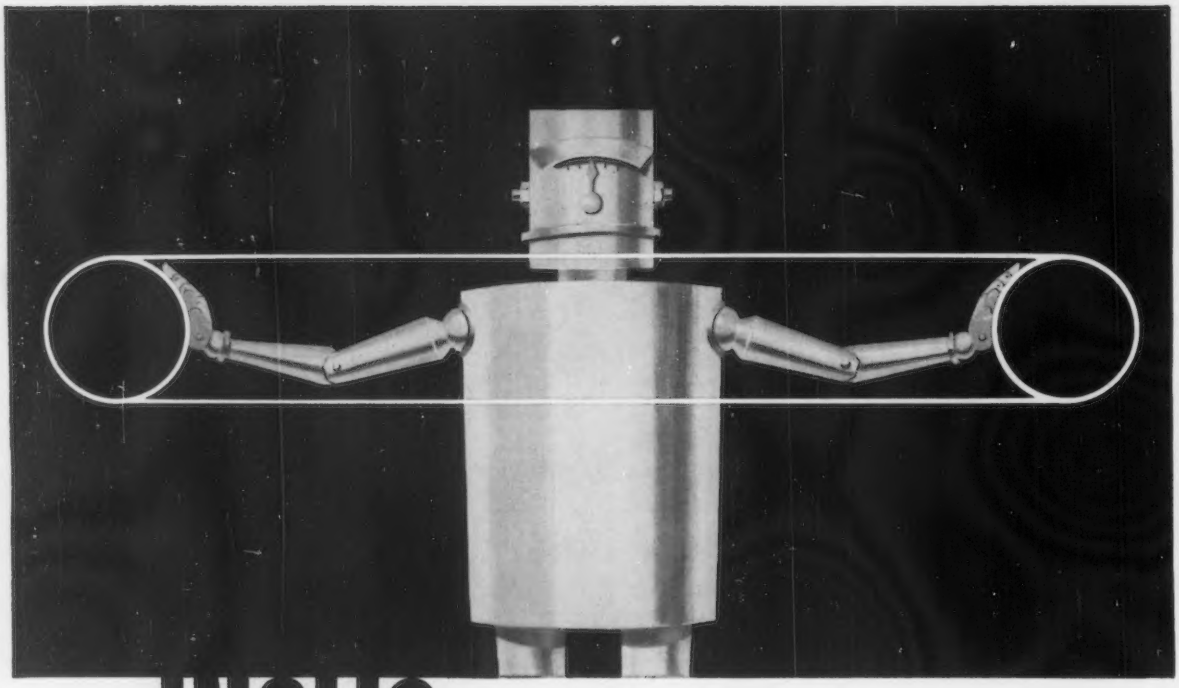
Title_____

Firm_____

Address_____

City_____ Zone____ State_____

Newest improvement in paper making!



INGLIS WIRE TENSION DEVICE

. . . lengthens wire life through automatic control

The newest Inglis contribution to better paper making takes the business of wire tension adjustment out of human hands—maintains the appropriate uniform tension automatically. The device lengthens wire life by compensating automatically for natural stretch, and by positively eliminating the danger of damage from overtension in a wire cooling after hot stock is removed. When required, easy manual changes can be made, allowing the paper maker to use his judgment in selecting the best tension for different wires. Tension settings may be recorded for later reference.

From head box to winder, paper machinery by Inglis is designed and built to keep the modern paper maker in step with modern production demands.

For full details of the Inglis Wire Tension Device, write for publication P.P. 604.

Inglis

PAPER MAKING MACHINERY

JOHN INGLIS CO. LIMITED

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Sales and Service throughout Canada and the U.S.A.

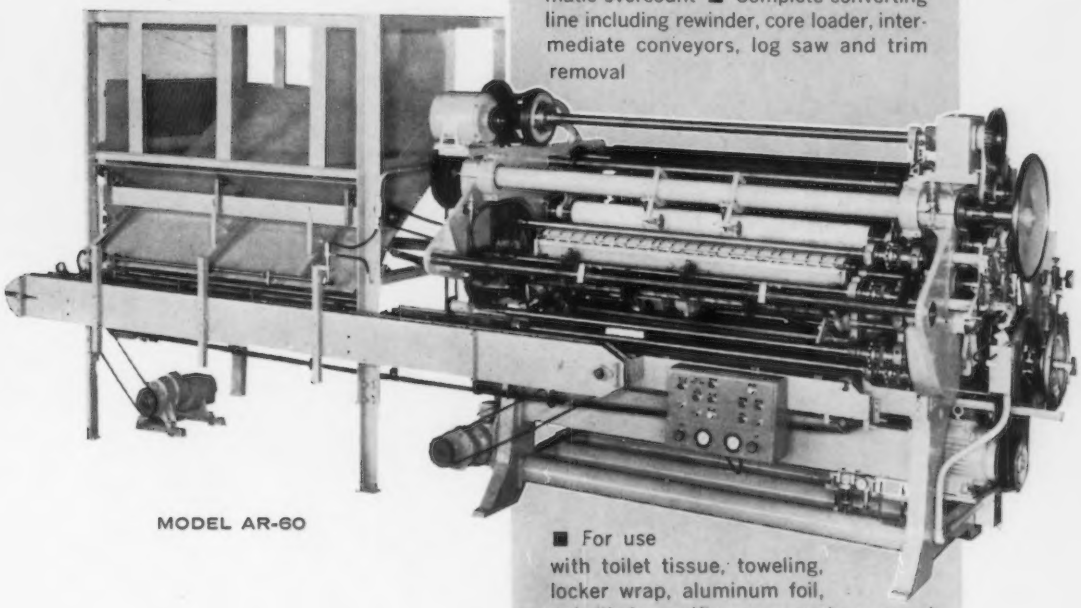
Automatic

REWINDER and CORE LOADER

■ **100 CASES OF TISSUE PER HOUR with one operator and a pair of rewinders***

■ Automatic full speed, web transfer with positive cut-off and absolutely accurate count ■ Automatic core loading, roll stripping, log transfer, cull discharge with mandrels mounted in turret — no manual labor ■ Soft rolls for latest consumer preference and shear-cut perforator for positive easy sheet tear-off ■ Shaftless unwind up to 72" diameter ■ Automatic constant tension unwind control ■ Finished roll diameter control through automatic overcount ■ Complete converting line including rewinder, core loader, intermediate conveyors, log saw and trim removal

*Actual production figures based on 4½" x 4½" sheet size, 650 count rolls — 96 roll cases off 2-81" rewinders.



MODEL AR-60

■ For use with toilet tissue, toweling, locker wrap, aluminum foil, polyethylene, gift wrap, waxed paper and other roll products.

WANT TO KNOW MORE? Please call or write and we'll send you complete information and specifications.

FOLDERS, REWINDERS, EMBOSSERS, NAPKIN AND CORE MACHINES, LETTERPRESS AND FLEXOGRAPHIC PRESSES, SPECIAL CONVERTING MACHINERY.

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a new NASH

designed for

- HIGH PERFORMANCE
- RELIABILITY
- LOWER
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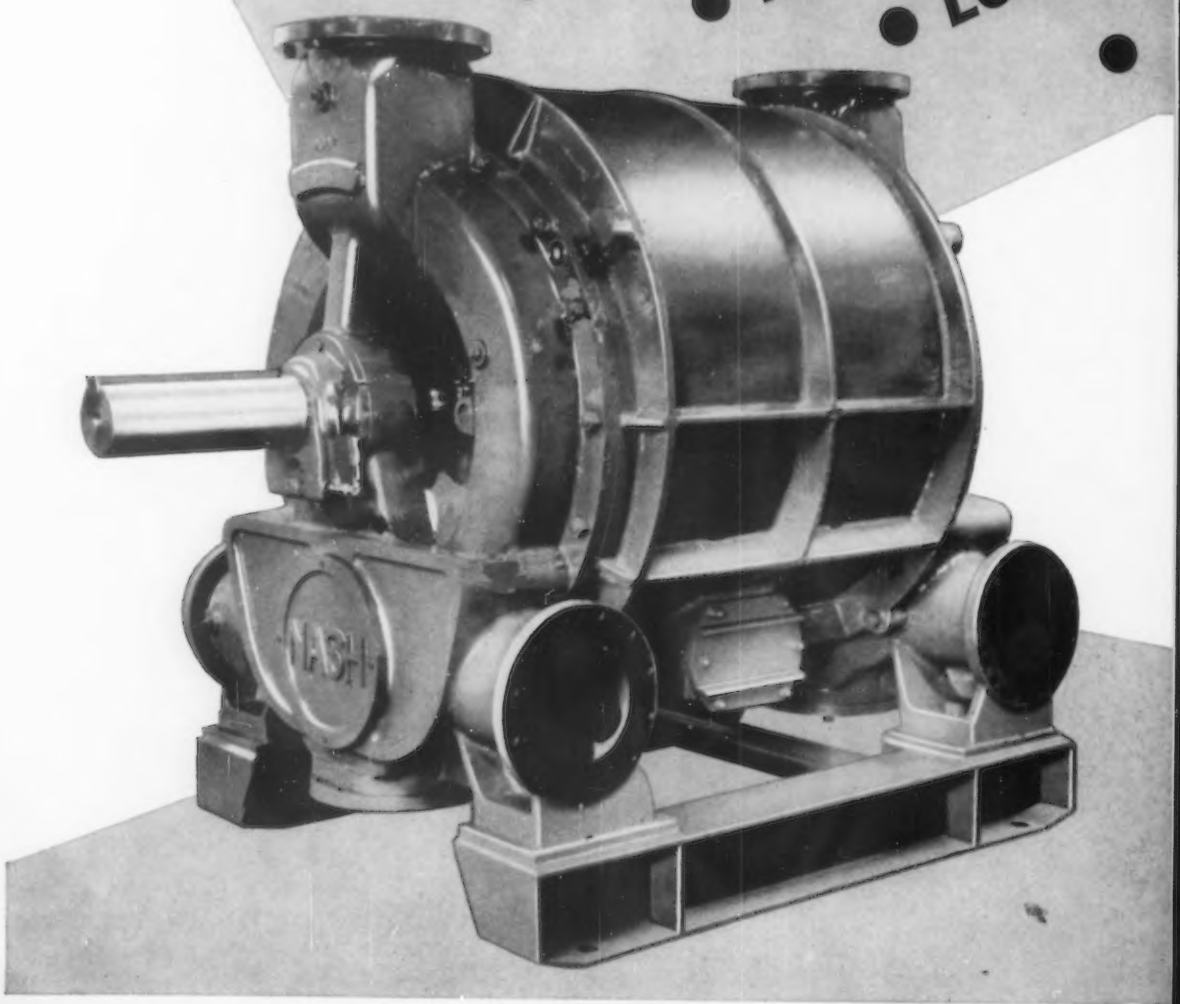

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INVESTMENT
REDUCED OPERATING COSTS

- Vacuums to 25″ of Mercury with sustained volume and lower horse power. Available in capacities to 9000 cubic feet.

Can be supplied with integral reduction gear for direct connection to high speed motors.

Material reduction in floor space required.

Send now for details of the new 6000 series Nash Vacuum Pumps.

NASH ENGINEERING COMPANY

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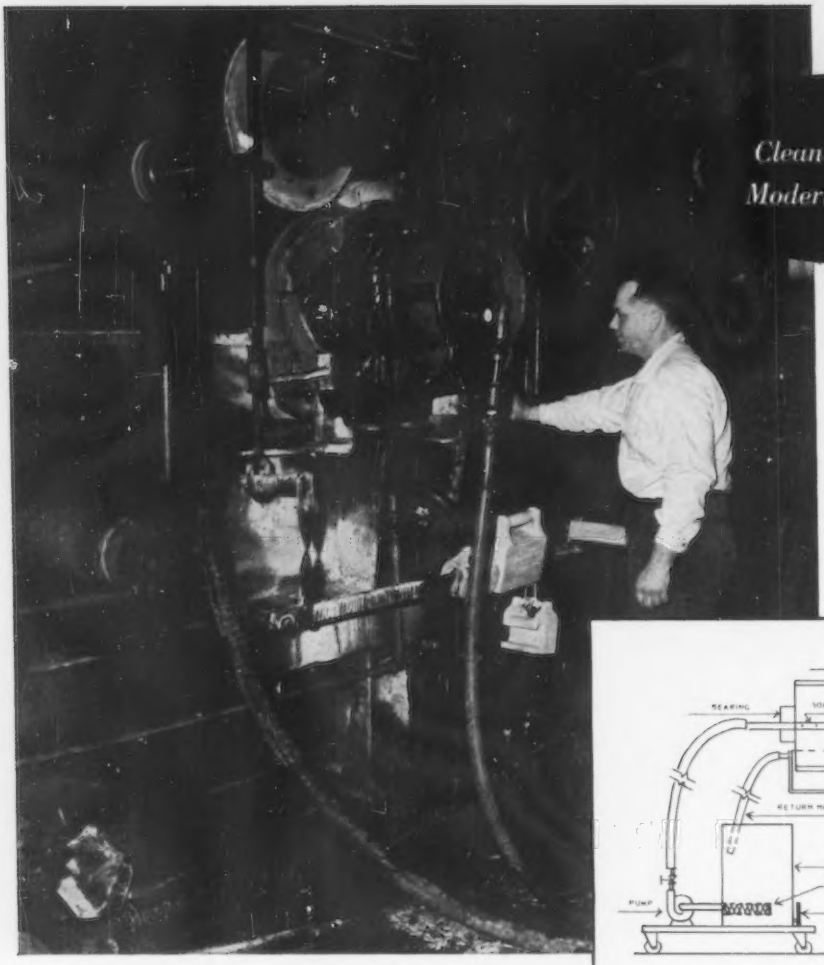
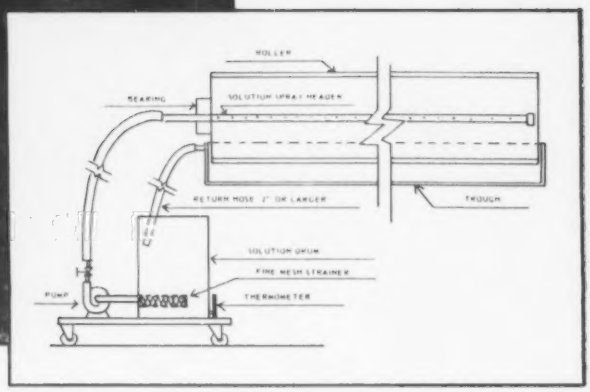


Modern Cleaning Systems for Modern Paper Making



How mill saves $835 a year cleaning just one suction press roll

Pierced with 5/32" holes which plugged up every few weeks of running, the 1½"-thick rubber covering on suction roll of a saturated asphalt paper line had to be cleaned by crews using electric drills on the imbedded soils.

Now, the job is mechanized. It's done in-place, *chemically*, at a savings estimated for *just this one roll* at $835 *per year*. And done better, to boot.

How system works: Taking the Oakite man's recommendations, the mill built a cleaning solution tank with pump and hose connections, installed a permanent save-all *under* the roll, and a connection to the shower pipe *inside* the roll.

A solution of Oakite Compound No. 85 sprays inside of the roll, flowing through the holes to the overflow tank. Meanwhile, the roll rotates through the solution accumulated in the save-all. After ½ hour of circulation, and a rinse, the job's done—thoroughly.

Drill-out method averages $379 for pulling, cleaning and replacing roll four times a year . . . or $1,516 yearly. Done *six* times a year, the Oakite method keeps roll in top condition, eliminates dismantling, costs only $681.

Ask your Oakite man how he can help you get better cleaning at lower cost. He's qualified to draw up a modern cleaning system for the whole mill. Call him in today, or send for Bulletin B-4591. Oakite Products, Inc., 68 Rector Street, New York 6, N. Y.

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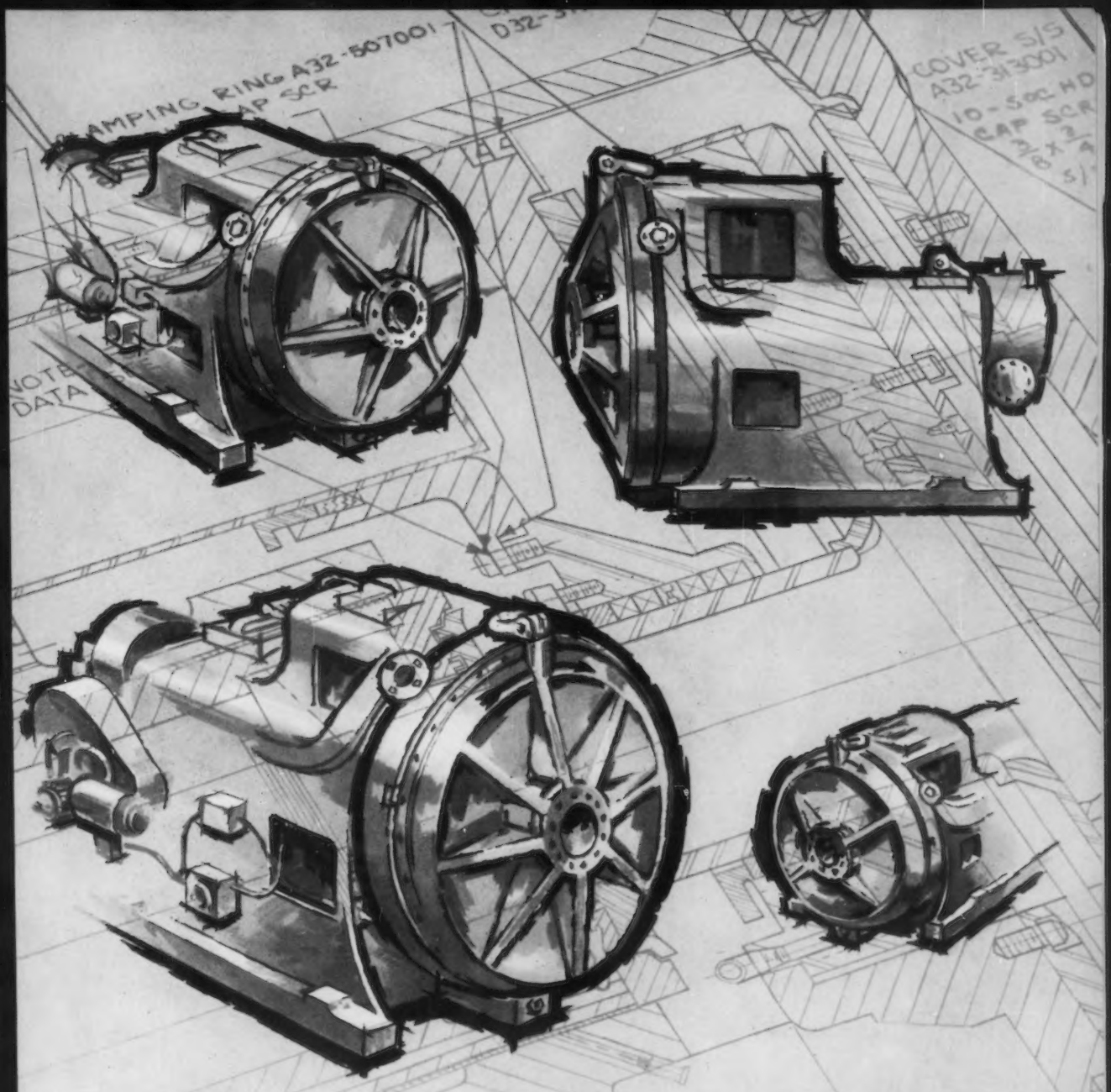
OAKITE
MATERIALS · METHODS · SERVICE
SCIENCE
In our 52nd year

Modern Cleaning Systems Keep Downtime DOWN



Leadership through constant improvement

What is it that makes Jones the leader in stock preparation equipment? We believe part of the answer lies in Jones' role in pioneering new machines and methods.

But pioneering isn't enough. Guided by our close association with the pulp and paper industry, we are constantly studying ways to *improve* our equipment. Take some recent improvements in the Jones Double-D, for example . . . new disk patterns that provide greater, more specific development of fibre potentials . . . two new models to extend the advantages of disk refining to low-production speciality machines and high-production high-speed machines

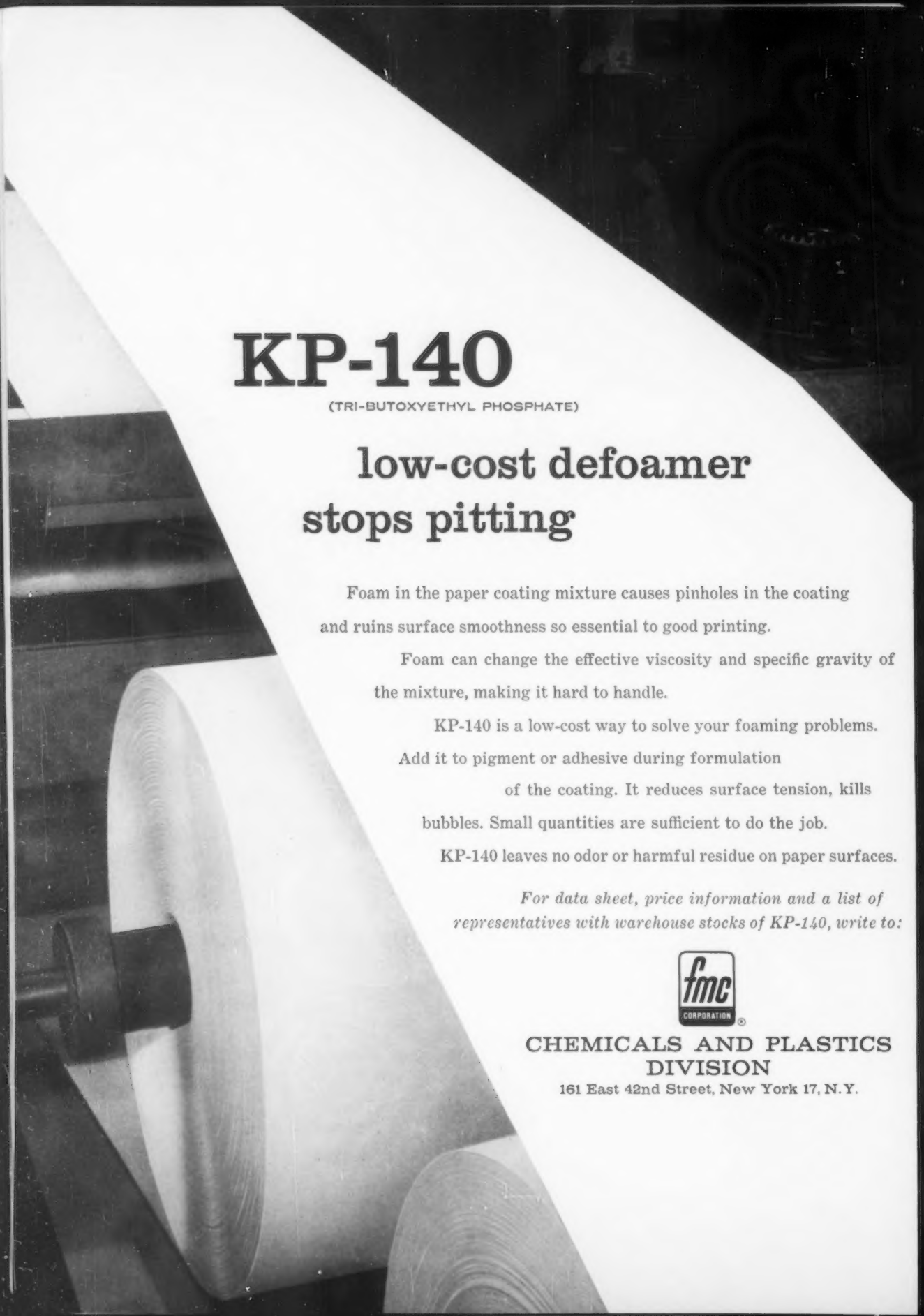
Whether the improvements are major or minor, the end result is always the same . . : Longer, more accurate "on the line" service with pulp and paper mill equipment from E. D. Jones.

E. D. JONES CORP. member BELOIT group PITTSFIELD, MASS.

Jones

PULP MILL EQUIPMENT AND STOCK PREPARATION MACHINERY

CANADIAN ASSOCIATES: THE ALEXANDER FLECK LTD., 75 SPENCER STREET, OTTAWA



KP-140

(TRI-BUTOXYETHYL PHOSPHATE)

low-cost defoamer stops pitting

Foam in the paper coating mixture causes pinholes in the coating and ruins surface smoothness so essential to good printing.

Foam can change the effective viscosity and specific gravity of the mixture, making it hard to handle.

KP-140 is a low-cost way to solve your foaming problems. Add it to pigment or adhesive during formulation of the coating. It reduces surface tension, kills bubbles. Small quantities are sufficient to do the job.

KP-140 leaves no odor or harmful residue on paper surfaces.

For data sheet, price information and a list of representatives with warehouse stocks of KP-140, write to:

fmc CORPORATION

CHEMICALS AND PLASTICS DIVISION

161 East 42nd Street, New York 17, N.Y.

You don't have to replace stock pumps for the sake of one part.

On Goulds Model 3135, for example, side plates, shaft sleeves, bushings and rotating parts are all renewable. When a side plate wears, that's all you replace—and at a fraction of the cost of a casing replacement. You save on labor and downtime costs, too.

Cut spare parts inventory. Obviously, the stocking of renewable parts requires less dollars and space than new casings and pumps . . . allows replacement of parts most subject to wear with tough alloys such as stainless steel when needed.

Like more detailed information? Send for bulletin on Goulds Model 3135: performance curves, conversion chart of ton output to G.P.M., an illustrated step-by-step description of the fast removal of the rotating element, and other useful information.

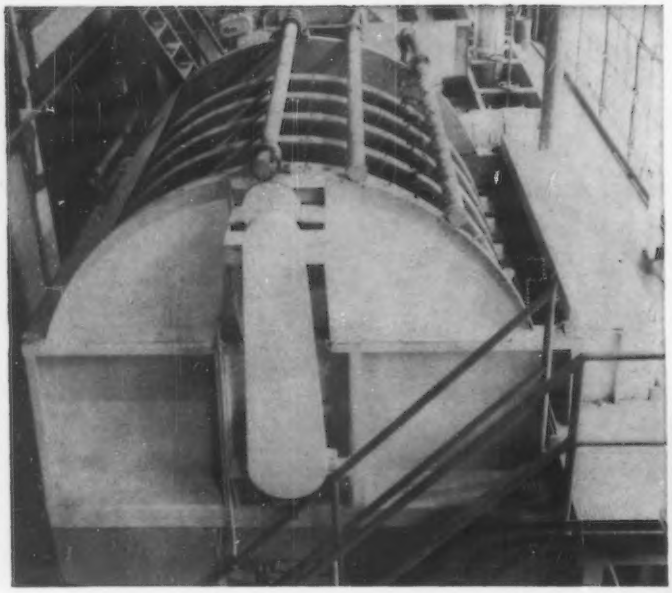
Goulds Pumps, Inc., Dept. PT-121 Seneca Falls, New York.

GOULDS PUMPS

NEW IMPCO

Disc Type Filter Design

At Scott Paper Company, Mobile, Alabama



Molded Discs and One-piece Stainless Core Raise Capacity and Clarity Standards — Due to New Hydrodynamic Design Concept.

Close up your white water system with the new Impco Disc Filter! This saveall concept, with its molded sectors and one-piece stainless core, is a fresh approach to disc type filtering. Hydrodynamic design and latest materials now give you a truly ultramodern filter.

Swept back, molded, lightweight, bonded-face sectors increase capacity and wire life. Contra-flow inlet eliminates pulp thickening in vat. Eighteen ported trunnion and full 180° valve opening produce sharpest filtrate separations. Speeds from ¾ to 4.5 R.P.M. Ask your Impco Sales Engineer for full information and write for Bulletin A5-1.

Above: Six-disc unit minus vat, showing valve and dual filtrate discharge. Filters available in sizes up to sixteen discs. Keyed aligning and attaching device makes assembly of a complete disc the simplest yet. A complete disc consisting of eighteen 22 pound sectors is assembled in one hour.

IMPROVED MACHINERY INC. NASHUA, NEW HAMPSHIRE

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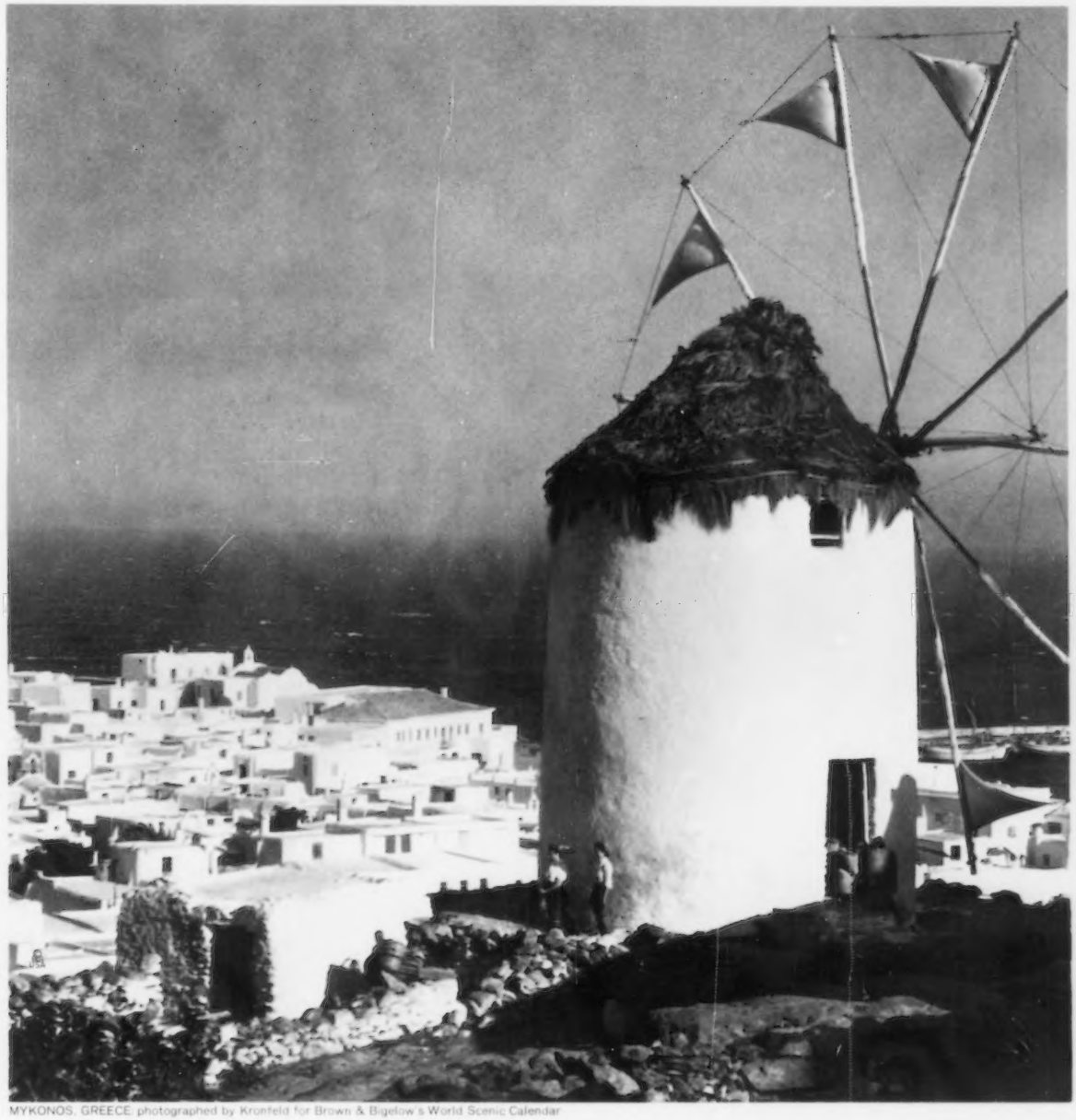

MYKONOS, GREECE photographed by Kronfeld for Brown & Bigelow's World Scenic Calendar

Brilliance...with Unitane® TiO_2

Fine printing must be matched with fine paper to obtain the brilliance desired in a beautiful color reproduction. Cyanamid's Unitane 0-110 in the paper used here has contributed to whiteness, opacity, and surface texture needed to bring clarity, freshness and beauty to the reproduction.

Unitane pigments give paper maximum opacity and brightness with minimum show-through. The uniform particle size and easy dispersion have made Unitane 0-110 the preferred titanium dioxide by many paper makers.

You can count on Unitane to provide the type of printing surfaces demanded by the graphic arts industry. This sample of four-color printing is eloquent evidence of how much quality papers can add. Ask your Cyanamid Pigments representative to give you the complete story on Unitane pigments.

This sheet opacified with Unitane 0-110

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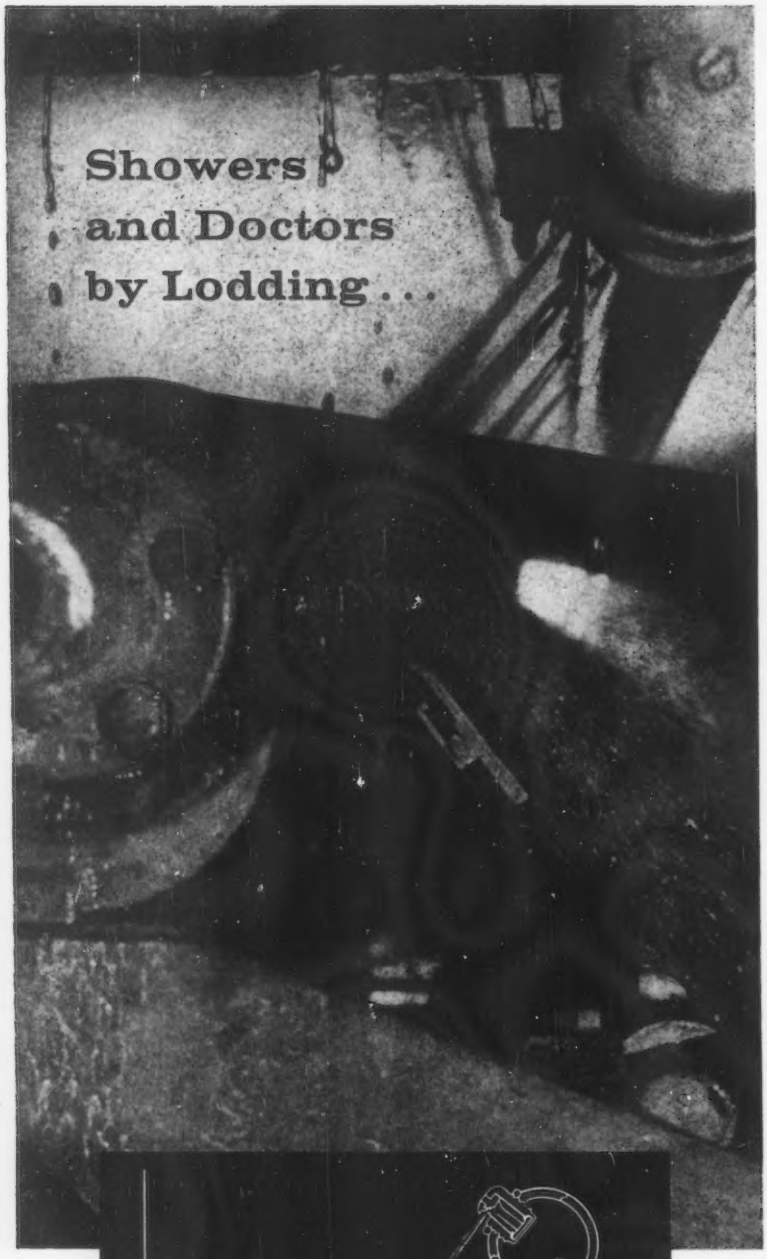


teamed to clean at Byron Weston Company

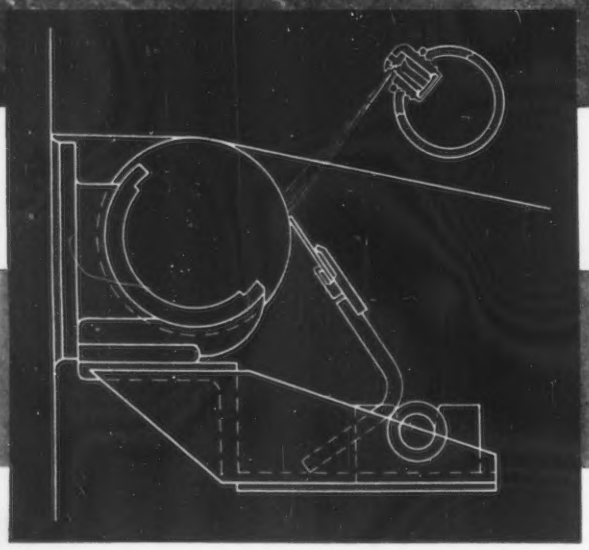
The team of Lodding Self Cleaning Showers and Lodding Doctors assures maximum wire life and greater machine productivity on Byron Weston Company's No. 1 machine. Note the excellent shower penetration of the Fourdrinier wire and the cleaning action of the doctor blade on this first outside wire return roll.

Six Lodding Self Cleaning Showers are operating on the Byron Weston Company No. 1 machine at a line pressure of 75 psi with clarified white water. The recirculated white water facilitates fiber recovery, assuring minimum dilution of stock, as well as conserving heat and water. See how these showers operate in tight places — only 4" to 4½" needed from pipe center to sprayed surface.

Steady, uniform pressure over the entire length of the doctor keeps the wire return roll absolutely clean. Proper balance and alignment are built into this custom engineered doctor, thus minimizing friction drag and the possibility of wire or roll damage.

Details like these guarantee the unique dependability of Lodding Self Cleaning Showers and Lodding Custom Engineered Doctors on installations throughout the world. You can rely on Lodding.

Call Lodding or your nearest sales representative for complete information.



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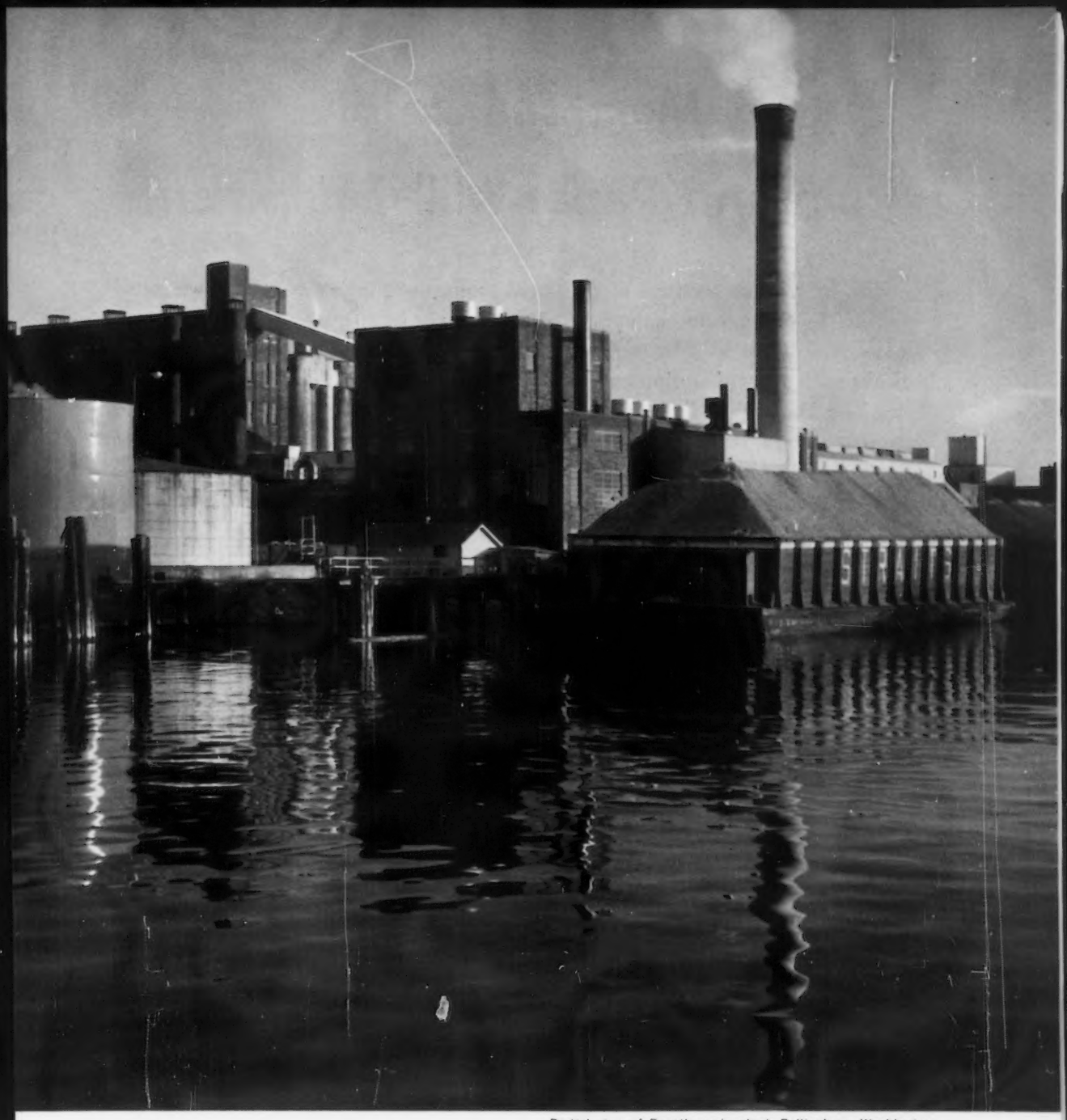

Partial view of Puget's main plant, Bellingham, Washington.

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Maintenance of

Pulp and Paper Mill Equipment

The forty-three sections of this book represent the first effort anywhere to publish in one volume comprehensive coverage of the maintenance of most major equipment used by our industry. Each section deals with the problems of a specific type of equipment such as drum barkers, jordans, vacuum pumps, etc. The book, therefore, presents a completely different and more concrete approach than our previous publication (still available) "Pulp, Paper and Board Mill Maintenance" where the subject was discussed in the more general terms of: organization, planning, lubrication, and the specialized problems of each operating department.

Principal machinery covered in *"Maintenance of Pulp and Paper Mill Equipment"* includes:

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Chipper Knives
Vibratory Screens
Magazine Grinders
Ring Grinders
Pulpstones
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Reject Refiners
Kraft Digesters
Black Liquor Evaporators
Precipitators
Lime Kilns
Conveyor Belts
Screw Conveyors
Bleach Plants
Stock Pumps
Disk Refiners
Jordans
Conical Refiners
Centrifugal Pumps
Chemical Pumps
Vacuum Pumps
Centrifugal Screens
Paper Machine Screens
Fourdriniers
Rubber Rolls
Doctors
Paper Machine Drives
Ventilation Systems
Size Presses
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Trends

Scandinavians Cut Market Pulp Production

The Scandinavian market pulp producers have agreed to cut their production of market chemical pulp by one million tons, equivalent to 20% of their output for 1962 in an effort to help stabilize the world pulp markets.

Correction on November Operating Rates

Paper and board mill operating rates were incorrectly reported in this column last week due to a typographical error. The correct figure is 94% for both paper mills and board mills.

Pulp Output Up 9% for October

U. S. total pulp production in October was 9% above the same month last year and is 2% ahead for the Jan.-Oct. period. U. S. domestic market pulp shipments were ahead 15% for October but off 4% for the period. Total pulp exports were up 5% for the month and 4% for the period. Shipments to Europe have been lagging from earlier in the year so that for the ten months they are off 2% (Oct. −9%) while shipments to Latin America are up 13% (Jan.-Oct.) and +24% (Oct.). Exports to Africa and the Far East are up 20% for the period and 43% for October.

Running 3% Ahead In Eleven Months

Paper and board production in the first 11 months (Jan.-Nov.) was 32.7 million tons, up 3% over the comparative period in 1960. This confirms our early summer estimate that production for 1961 would be 3-4% ahead of last year. Paper production totaled 14.4 million tons, up 2%, paperboard at 15.3 million tons was up 5% and construction paper and board was very close to last year, at 3 million tons.

Newsprint High Excess Capacity Through 1965

Continuation of the present world excess newsprint capacity (2½ million tons) for the next five years is foreseen in a report by the Newsprint Ass'n. of Canada. It is stated that growth in world demand will be more than taken care of by completion of a reasonable number of the expansion projects already announced so that the present stand-by capacity will not be reduced. For further details on this report see next week's issue.

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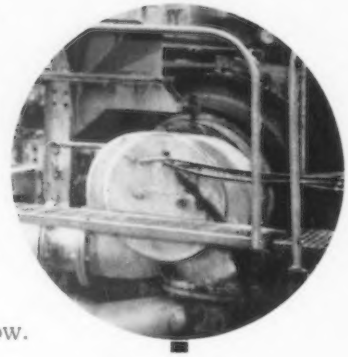
Suction Breast Roll



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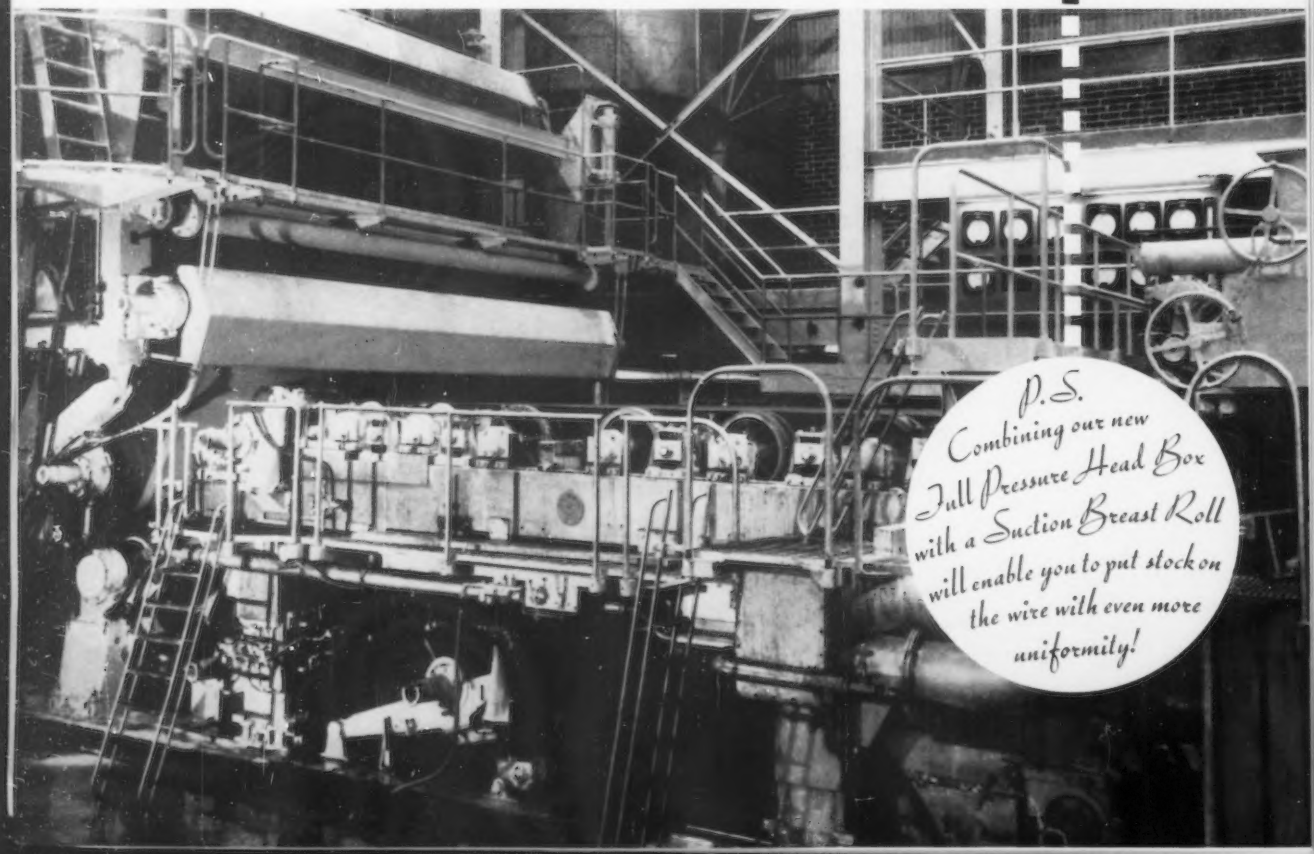

P.S.
Combining our new Full Pressure Head Box with a Suction Breast Roll will enable you to put stock on the wire with even more uniformity!

PJT | PAPER TRADE JOURNAL

WEEK OF DECEMBER 18, 1961

New York Times Acquires Interest in Gaspesia Pulp and Paper Mill

The New York Times has acquired a 49 per cent interest in the Gaspesia Pulp and Paper Co. which plans to build a newsprint mill in Chandler, Quebec, on the site of its bleached sulphite market pulp mill.

Gaspesia had been a wholly owned subsidiary of the Anglo-Newfoundland Development Co. It has been producing sulphite pulps at its plant in Chandler, on the Gaspe Peninsula, since 1937.

The first newsprint machine at the mill will have a capacity of 100,000 tons a year. It is scheduled to begin operations in late 1963. Plans for this new machine were announced last year in PAPER TRADE JOURNAL. Price Brothers Co., Ltd., Canadian newsprint producer, holds a 97 per cent interest in Anglo-Newfoundland Co.

A statement issued by Arthur Hays Sulzburger, chairman of The Times, said that the new arrangement would continue a newsprint supply program begun in 1926, when The Times joined with the Kimberly-Clark Corp. in setting up the Spruce Falls Power and Paper Co. to produce newsprint at Kapuskasing, Ont.

Spruce Falls now supplies about two-thirds of The Times' newsprint requirements and also provides a substantial part of its net profits.

The new mill at Chandler will raise the newsprint capacity of the Price group to 900,000 tons a year. Price Bros. is a substantial producer of lumber and other pulp and paper products. The company is now completing a $22,000,000 expansion of its kraft pulp mill in Kenogami, Que.

Snowflake Mill Now Nearing Completion

The first kraft linerboard and paper to be manufactured in Arizona is now being made by Southwest Forest Industries in its newly constructed plant at Snowflake Mills, Ariz. Initial deliveries of the linerboard and paper were made to the company's Container Division in Los Angeles, Calif., and Glendale, Ariz., and to converters in the Middle West.

Fifteen months after ground was broken, on August 13, 1960, the kraft machine, one of two to be installed is in production. The other machine for the manufacture of newsprint is expected to be in production late in December.

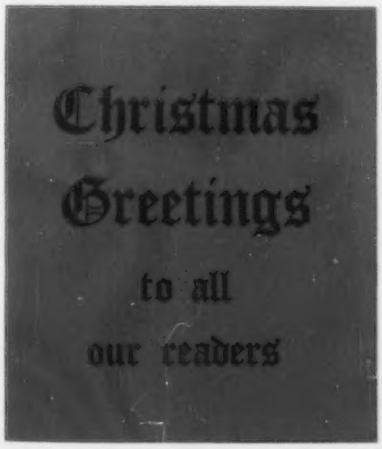
Also under construction at the mill site is a grocery bag plant which will utilize 800 tons per month of the paper mill's kraft paper production. The bag pant is expected to be in full operation early in 1962.

Original estimates called for the expenditure of $32.5 million for the completion of the pulp and paper mill which was built for Southwest by The Rust Engineering Co. of Pittsburgh.

At rated capacity the mill will produce 65,000 tons of linerboard and kraft paper and 75,000 tons of newsprint. Present indications are that these rated capacities will be exceeded. Fifty thousand tons of newsprint have been committed under contract to The Hearst Corp. for delivery to its newspapers in Los Angeles. Two-thirds of the kraft paper production will go to the company's container and grocery bag operations.

Southwest Forest Industries recently announced an agreement with Premier Container Corp. of Franklin Park, Ill., under which the Arizona corporation will acquire the Chicago operation.

This new mill will be described in an extensive feature article in PAPER TRADE JOURNAL after all construction has been completed.



Dow Jones Acquires Stock In West Tacoma Newsprint

Dow Jones & Co., publisher of the Wall Street Journal, has acquired stock interest in West Tacoma Newsprint Co., Steilacoom, Wash. The company purchased common stock previously held by the Seattle Times, and a portion of common stock held by Times-Mirror Co. of Los Angeles, Calif.

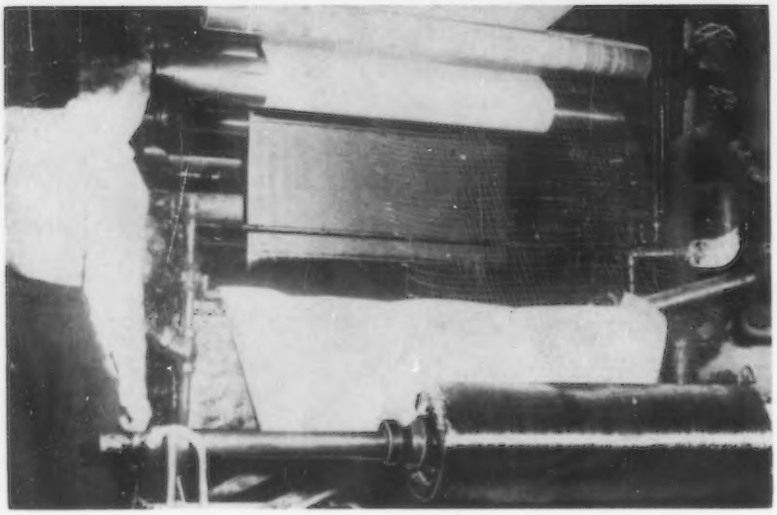
Wall Street Journal printing plants on the West Coast will receive newsprint from West Tacoma beginning in 1964. West Tacoma produces newsprint exclusively for newspaper publishers owning common stock.

Possible New Pulp Mill for New Brunswick

New Brunswick may get a new pulp mill. An act incorporating South Nelson Forest Products, Ltd., Canadian subsidiary of Cartiere del Timavo S.V.P., of Trieste, was recently passed at a session of the New Brunswick legislature.

For some months now, Timavo has been dickering with the government over a new pulp mill.

Amendments to the provincial Crown Lands Act, also passed at the fall session, will permit transfer of necessary timber leases to the new company, Lands and Mines Minister H. G. Crocker says.



PRODUCING A NEW FABRIC. Fine steel wire fabric is shown here being bonded between two sheets of paper at the Newport News, Va., plant of the Arkell Safety Bag Co.

New Product Combines Paper with Steel

Versatile new paper that holds any shape has been introduced by the Arkell Safety Bag Co. Developed in collaboration with U.S. Steel's American Steel and Wire Division, the new product consists of fine steel wires bonded between two sheets of paper with a water resistant laminant. It will be produced in the firm's plant in Newport News, Va.

The new paper product results in a sheet that can be bent easily like paper but will hold its shape like steel. While gaining strength through the use of cold drawn steel wire, the product also retains the lightness and workability of a piece of wrapping paper and has the magnetic properties of steel. It can be corrugated and formed and has superior strength in all directions.

A wide range of uses for paper reinforced with various wire configurations has been suggested. Included are such diverse applications as truck tarpaulins and gondola covers for the transportation industry; snow fence, livestock shelters, and waterproof paper irrigation piping for the agricultural industry; windbreaks, temporary floor covering, and drop cloths for the construction industry; super-strength paper, tags, labels, hogsheads, shrouding, and multi-wall bags for the industrial packaging industry, as well as a host of other uses ranging from temporary drainage products and troop shelters for the military to rose plants for the horticulturist, and disposable paper clothing.

TAPPI Names Two Medal Winners for 1962

W. Boyd Campbell and C. Earl Libby have been named the 1962 recipients of the TAPPI Medal, the association's highest honor to individuals contributing to the technical advancement of the pulp and paper industry. Since the first two TAPPI Medals were conferred in 1928, a total of 29 individuals have been selected for this honor.

Dr. Campbell and Dr. Libby are well known in the United States and Canada for their long and distinguished service to the industry. The awards will be presented to them on February 22, 1962, at the 47th Annual Meeting of the association in New York City.

Dr. Campbell entered the Forest Products Laboratories of Canada at Montreal in 1913 as assistant superintendent. He was called in consultation on the design of the first U.S. gas mask in 1917. For four years after the war he worked for Provincial Paper, Ltd., at Georgetown, Ontario, before returning in 1925 to the Pulp and Paper Division of the Forest Products Laboratories in Montreal. During the next 15 years he undertook a number of fundamental research studies on beating, cellulose-water relationships, and pulp evaluation.

In 1940 he was appointed director of technical research at the Pulp and Paper Research Institute of Canada. During World War II he made significant contributions in such widely diversified developments as electrical conducting papers, paper filters for gas masks, safety papers, nonmetallic land mines, and iceberg air craft carriers.

Following the war Dr. Campbell continued to direct fundamental research programs at the Pulp and Paper Research Institute until his retirement in 1953. Since that time he has served several pulp and paper companies on a consulting basis.

W. Boyd Campbell

C. Earl Libby

In 1920 Dr. Libby was named assistant professor of Forest Chemistry at the New York State College of Forestry at Syracuse, N. Y. Two years later he became its professor of Pulp and Paper Technology. From 1933 to his retirement in 1952 he was head of the department of Pulp and Paper Manufacture at the College of Forestry. During this time he was active not only as an educator but also as a consultant to paper

companies and chemical manufacturers. During these years he published many papers on pulping hardwoods, mechanical pulping, deinking, bleaching, sizing, and microscopy.

In 1952 he was named professor of pulp and paper technology at the School of Forestry, North Carolina State College, Raleigh, N. C., and one year later was appointed to the newly established Reuben B. Robertson Distinguished Professorship. At North Carolina State College he was instrumental in developing the curriculum in pulp and paper technology and the laboratory facilities which were completed and occupied in 1956. He retired as department head in 1960 and now lives in Pompano Beach, Fla.

Rising Need for Trained Men for Paper Industry

A survey of future plans for hiring college trained people in the paper and allied products industry revealed that between 1961 and 1965 companies plan to add a number of personnel in this category to their staffs equal to 38 per cent of the total now employed. This estimate is based on the replies of some 300 manufacturers and distributors to a survey made by the Paper Industry Career Guidance Committee.

According to the survey, the greatest single future need of the industry is for engineers. Next come business administration, chemists, accountants, foresters, marketing men and technologists.

Approximately 70 per cent of the manufacturers responding to the survey estimated their future manpower requirements. From the replies of these companies, here is the relationship between projected 1961-65 personnel needs and employment.

The survey indicates that new engineers needed by the manufacturers amount to 56 per cent of those they now employ; business administration majors represent 42 per cent of current employment; chemists—46 per cent; accountant—71 per cent; marketing majors—132 per cent; foresters—30 per cent and pulp and paper technologists—140 per cent.

In all, men and women with degrees in 42 different fields were listed as desired by the companies answering the survey.

Distributor requirements will be up sharply between 1961 and 1962. Compared to the present, these will be; business administration +80 per cent, marketing +235, engineering +102, economics +110 and accounting 63.

GRADUATE AND SPECIAL STUDENTS in Pulp and Paper at the University of Maine, Fall Semester, 1961. Left to right—Prof. Lyle C. Jenness, head of Chemical Engineering Department; Neu M. De Oliveira, Brazil; Hyung K. Cho, Korea; Lawrence M. Thompson, Canada; N. Ravindranathan, India; Noshir B. Havewala, India; Takeo Watai and Reijiro Nakakura, Japan; and associate professor of Pulp & Paper Technology, Clayton T. Bockus.

Five Foreign Lands Represented at U.M.

Seven of the upperclassmen enrolled as majors in pulp and paper technology at the University of Maine come from foreign lands.

India, Korea, Brazil, Japan and Canada are represented, according to Prof. Lyle Jenness, head of the department of chemical engineering, who stated that this is the usual percentage of foreign students studying this field of technology in which the University of Maine is a world-wide leader.

N. Ravindranathan and Noshir B. Havewala are from India. The former is studying for his master's degree in pulp and paper. Mr. Havewala is working for his master's in chemical engineering, but pulp and paper courses are an important part of his graduate program.

Hyung K. Cho, Korea; Ney M. DeOliverira, Brazil; Reijiro Nakakura and Takeo Watai, Japan, and Lawrence M. Thompson, Quebec, are special pulp and paper students.

Paper and Paperboard Production

The American Paper and Pulp Association reported the ratio of the United States paper production to mill capacity for the week ending December 2, 1961, at 93.6 per cent, compared with 90.5 per cent, revised, for the preceding week. The ratio was 93.4 per cent for the corresponding week a year ago.

The National Paperboard Association reported the paperboard production ratio for the week ending December 2, 1961, at 90 per cent, compared with 93 per cent for the preceding week and 79 per cent for the corresponding week a year ago.

(Detailed statistics on page 56)

APA Announces Dates For 1962 Annual Meeting

The Open Industry Sessions of the 28th Annual Meeting of the American Pulpwood Association will be held on February 20, 21 and 22, 1962, at the Hotel Roosevelt, New York, N. Y.

Starting with the Annual Luncheon on February 20, the Forest Policy Forum Session will follow. This session will feature outstanding speakers on the theme "The Impact of Defense Mobilization on the Pulpwood Industry."

Two Open Industry Sessions on Wednesday, February 21, will include presentations and discussions on the themes "Small woodland owners—as the Industry Sees Them" and "Recreational and Financial Management of Industry-Owned Timberlands." These topics are of national interest and will be covered by qualified speakers from within and outside of the industry. Wednesday's sessions will close with the annual dinner.

PAPER PEOPLE

W. C. Froude, Jr.

H. D. Shope

Montmorency Names N.E. Pulp Sales Representative

William C. Froude, Jr., has been appointed pulp sales representative in New England for Montmorency Paper Co., Inc. He will have headquarters in Manchester, Conn.

Montmorency Paper is the exclusive sales representative in the United States for Anglo-Canadian Pulp and Paper Mills, Ltd., Quebec City, and Dryden Paper Co., Ltd., Dryden, Ontario, Canada.

Mannion Promoted to Shift Supt. at Grays Harbor

Appointment of John R. Mannion to paper mill shift superintendent has been announced by L. M. McGinnis, resident manager of Grays Harbor Division, Rayonier Incorporated.

Mr. Mannion started working at the paper mill after graduating from Weatherwax High School, and has advanced through several machine operating jobs during the past 27 years. He replaces T. A. McNamara, who retired earlier this month.

Mr. McGinnis said Mr. Mannion will supervise a machine crew on the present paper-making facilities which are being expanded to more than double the current capacity. The second paper machine and additional paper-finishing and warehousing facilities are scheduled for completion soon. When completed, the newly formed Grays Harbor Paper Co.—a joint Rayonier and Hammermill Paper Co. organization—will assume operation of the Hoquiam paper mill.

International Paper Names Industrial Engineer

Appointment of Harlan D. Shope as industrial engineer for International Paper Co. has been announced. In his new position Mr. Shope would be responsible for company activities relating to new plant location, water supply and waste disposal.

He joined International Paper in 1927 as a field engineer at Camden, Ark., and since that time has assisted in the location and construction of seven of the company's southern mills.

During the past 25 years as construction and industrial engineer for the Southern Kraft Division, Mr. Shope has been active in the fields of plant locations, water supply and waste disposal. Most recently he has completed a series of studies on the location of the company's proposed West Coast pulp and paper mill.

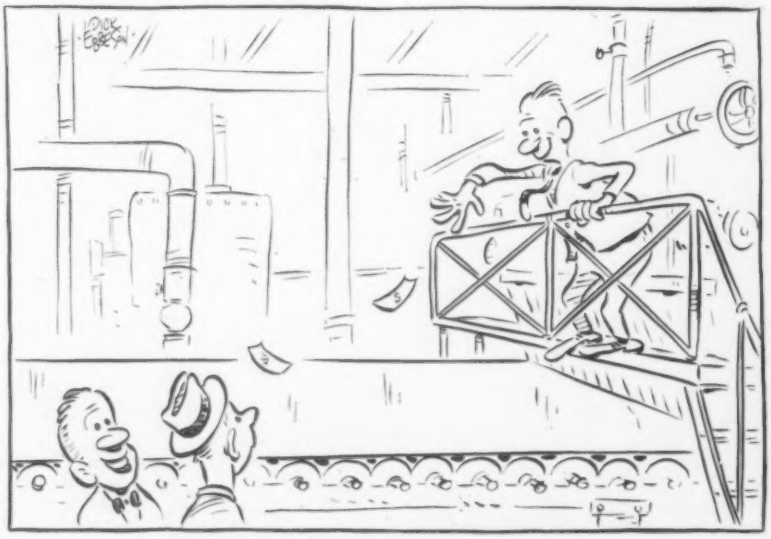
St. Regis Selects Research Associates

Otto J. Kallmes and Alfred E. Beecher have been appointed research associates by the Technical Operations Division of St. Regis Paper Co. Both will be located at the new St. Regis Technical Center in West Nyack, N. Y.

Dr. Kallmes, who is currently understaking fundamental research in the field of paper structure, received his B.S. degree in chemical engineering from Northeastern University and his doctorate from The Institute of Paper Chemistry. Prior to joining St. Regis as a research chemist in 1960, Dr. Kallmes did post-doctoral research in England.

Mr. Beecher, who is currently undertaking fundamental studies in the field of systems control, holds a B. S. in electrical engineering from the University of Michigan, an M.S. in electrical engineering from the University of Southern California, and Electrical Engineer from the Massachusetts Institute of Technology.

Also announced was the appointment of Eugene F. McCarty as development associate. He will be assigned to special development work in the area of new packaging tech-



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Centriscreens come in four sizes — *Model 6*, only 30″ high and 34″ around, delivers up to 1200 gpm; *Model 10* for up to 3500 gpm; *Model 14* for up to 6000 gpm; *Model 18* for up to 10,000 gpm.

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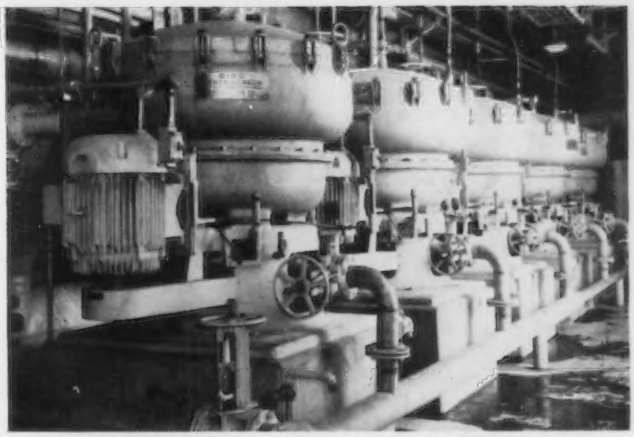

These **Model 14** Centriscreens are delivering 650 tons of kraft per day

These **Model 10** Centriscreens are ahead of a Fourdrinier making high grade book papers

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nology and will be located at the West Nyack Technical Center.

Mr. McCarty, who joined St. Regis in 1959, received the degrees of B.S. and M.S. in wood technology from the University of Minnesota.

Oxford Paper Announces Sales Staff Promotions

Promotion of Thomas F. Nolan, Jr., and Joseph R. Carney to the new positions of general sales manager and manager of sales coordination, respectively, have been announced by Oxford Paper Co. Other promotions announced were those of Samuel D. Dillon to western sales manager and Lawernce K. McGrath to assistant western sales manager.

Mr. Nolan joined Oxford in 1940 as secretary to Andrew M. McBurney, vice president, sales. Since April, 1960, he has been director of western sales. In his new position as general sales manager, he will be located in New York and have responsibility for all of Oxford's merchant sales, reporting directly to the vice president of sales.

Mr. Carney joined Oxford in 1946 as a trainee. He has held the positions of materials handling engineer, order clerk, production control manager, production coordination supervisor, and staff assistant for manufacturing, having been located at Oxford's mills in both Maine and Ohio as well as the New York office. Since July 1958, he has been staff production manager. In his new position as manager of sales coordination, Mr. Carney will be responsible for sales profit planning and scheduling. He will continue to be located in New York and will report directly to the vice president, sales.

Samuel D. Dillon joined the company in 1929 in the sales order department. Later he became Chicago sales manager and since 1952 he has been assistant western sales manager. Succeeding Mr. Nolan as western sales manager, Mr. Dillon will continue to be located in Chicago and will report to the general sales manager.

Lawrence K. McGrath joined Oxford in its western sales office in 1953. In 1960 he became a district sales manager. As assistant western sales manager, Mr. McGrath will continue to be located in Chicago.

All four of the appointments become effective January 1, 1962.

Van Buren Taliaferro, director of marketing, and C. Ricker Lewis, manager and direct sales, will continue to report directly to the vice president of sales.

NEKOOSA-EDWARDS vice president, **C. H. Reese** (center), with **C. M. Sigvardt** (right), manager of manufacturing operations, and **Frank Coldwell** (left), manager of engineering and power.

Nekoosa-Edwards Shifts Executive Posts

Charles H. Reese, formerly vice president of manufacturing for Nekoosa-Edwards Paper Co., has been appointed vice president of the company.

John E. Alexander, president and general manager of Nekoosa-Edwards, in making the announcement said, "Mr. Reese will act as adviser to the president and general manager, the executive vice president, and the manager of the engineering and power department."

Charles M. Sigvardt, manager of manufacturing operations, will assume the day to day manufacturing responsibilities previously discharged by Mr. Reese. He will be directly responsible for all manufacturing operations and will report to S. A. Casey, the executive vice president.

Frank Coldwell, manager of engineering and power, who has previously reported to Mr. Reese, will also report to Mr. Casey,

"This realignment of manufacturing responsibility," said Mr. Alexander, "will release Mr. Reese from the everyday details of operation to concentrate on all corporate activity with respect to planning for major facilities, such as major changes in pulping processes, new power facilities, new paper machines and major alternations of finishing, warehousing, and shipping."

Gardner to Join Staff of Inst. of Paper Chemistry

The Institute of Paper Chemistry has announced that Dr. Howard S. Gardner will join its staff as a senior research associate and member of the faculty. He is at present director of research and development for Fibreboard Paper Products Corp. According to an announcement from Fibreboard Dr. Gardner will terminate his duties there on December 31.

Keep your eye on our Classified Advertising Section

New Haven Board & Carton Names Vice Presidents

The New Haven (Conn.) Board and Carton Co., Inc., has established three new divisional vice presidencies. Frank E. Irsch becomes vice president, folding carton sales; Herman C. Wicks, vice president, board sales, and Bernard M. Duffy, vice president, corrugated sales.

Mr. Irsch was recently with the Guilford Folding Box Co. as vice president, carton sales.

Mr. Wicks joined New Haven Board and Carton in 1922 and was named board sales manager in 1948.

When William W. Fitzhugh, Inc., merged with New Haven in 1959, Mr. Duffy remained as sales manager with the Fitzhugh Corrugated Div.

NEWS OF CONVERTERS

PCA Reorganizes Molded Pulp Division

In a major reorganization of its molded pulp division, Packaging Corp. of America, of Evanston, Ill., has announced a new organizational structure which includes five management appointments.

W. H. Mapes, Jr., senior vice president, molded pulp division, headquartered in Griffith, Ind., said the changes will enable the company to sell its great variety of molded pulp packaging products in even broader markets than at present. In addition, the reorganization brings about more effective coordination and utilization of the diversified facilities and talents of the company in the molded pulp and egg packaging fields.

J. K. Limbert, formerly vice president—egg packaging sales, has been appointed to the new position of vice president and general sales manager—molded pulp division. He will be responsible for the sales and sales promotion activity of molded pulp products, egg packaging, and related items. He will headquarter at the company's plant in Griffith, Ind.

Ralph S. Lau, sales representative, has been appointed to the position of sales manager—Molded Pulp Division, Western territory. Mr. Lau will have his offices in the company's new molded pulp plant in Berkeley, Calif., scheduled to open in mid-1962. The Western territory includes the states of Hawaii, Alaska, Washington, Oregon, California, Idaho, Montana, Wyoming, Utah, Colorado, Arizona, Nevada, and New Mexico.

Jack A. Loftus, formerly sales manager—egg cartons, has been appointed to the new position of sales manager, poultry supplies—Molded Pulp Division, Eastern territory. Mr. Loftus will be located in Griffith, Ind., and will head a sales staff covering the eastern two-thirds of the nation.

Richard P. Neidow, salesman, has been appointed sales manager, paper merchant supplies—Molded Pulp Division, Eastern territory. He will be located in Griffith, Ind.

Charles E. Augustin, general manager of the company's Quincy, Ill., carton plant, a major producer of consumer egg cartons will operate under W. H. Mapes, Jr., as part of the molded pulp division. The plant formerly was part of the firm's folding container division.

With these changes, Packaging Corp. of America's molded pulp division now has three operating plants, located in Griffith, Ind., North Kansas City, Mo., and Quincy, Ill., and a fourth plant now being equipped in Berkeley, Calif.

Zimmer Paper Products Elects Officers

Zimmer Paper Products, Inc., of Indianapolis, Ind., has announced the election of new officers.

Karl R. Zimmer, founder of the company, has recently been elected chairman of the board.

Robert M. Koch will serve as president and general manager.

L. L. Harshbarger has been elected vice president and secretary.

The company has produced flexible packaging for the food industry for almost one-third of a century. Its recent plans for diversification will include products for protective packaging for heavy industry. As well as special coatings, impregnations and laminated papers, films, foils.

Wabash Fibre Box Promotes Two Terre Haute Men

Don W. Campbell of Terre Haute has been named general manager of the Chicago plant of the Wabash Fibre Box Co. Division, and Ronald R. Hanks has advanced to Mr. Campbell's former position as division controller. The Weston Paper and Manufacturing Co., Terre Haute, Ind., is Wabash's parent firm.

Mr. Campbell will immediately assume his new duties at the firm's corrugated box plant at 6850 West 62nd Street in Chicago, where he succeeds Norbert G. Rennicke, who has been acting as general manager the past two years. Mr. Rennicke will continue with the firm in Chicago in his regular position as assistant to the president, and Mr. Hanks will continue to be located in the Wabash division's general offices in Terre Haute.

Wacke Advances at Forest Products

Robert H. Wacke, of Toledo, Ohio, has been named assistant to the general manager of the Minneapolis-St. Paul corrugated shipping box plant of the Forest Products Corp., a subsidiary of Owens-Illinois.

Mr. Wacke succeeds Lyle L. Zitzman, who is on military leave with the Naval Air Corps. William Bofenkamp is general manager.

Mr. Wacke joined Owens-Illinois 15 years ago and served in several capacities in the company's Glass Container Division before being named community relations manager for the company in 1954. Five years later he became communications manager for the former Paper Products Division, and since last May has served as administrative assistant to the general manager of the Forest Products Division.

Star Paper Tube Announces Expansion

Star Paper Tube, Inc., which has recently completed construction of a new plant at Danville, Va., has announced plans for additions to the Austell, Ga., and Rock Hill, S. C., plants.

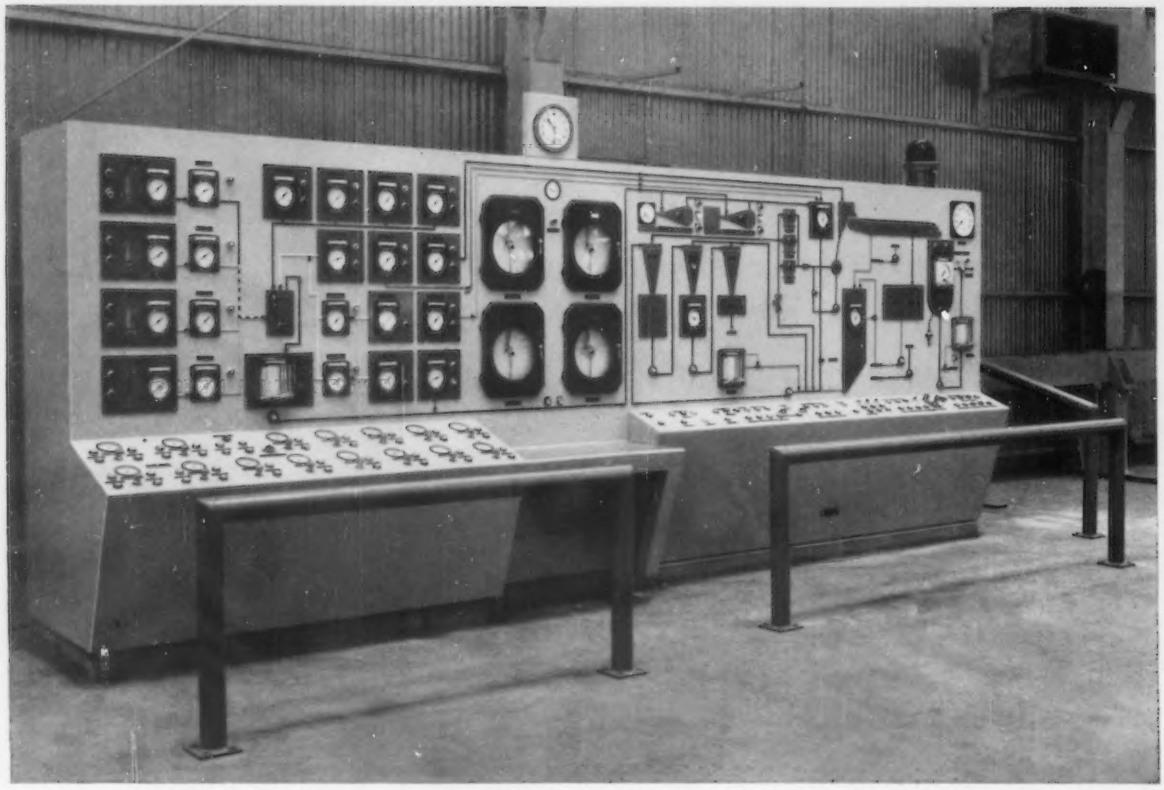
Construction has already begun on the Austell plant but plans for the Rock Hill addition are still in the formative stage and actual construction will not begin for several months.

Hinde & Dauch Names Regional Engineer

Appointment of Michael Shenigo, Jr., as regional engineer for the Hinde & Dauch Division, West Virginia Pulp and Paper Co. has been announced.

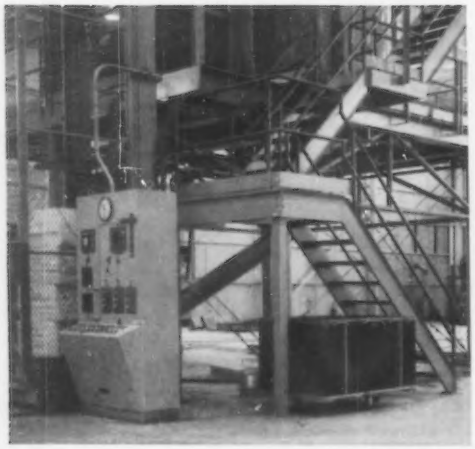
As regional engineer, Mr. Shenigo will be responsible for engineering matters pertaining to the buildings and equipment of H&D's Richmond region plants located at Richmond, Va., Baltimore, Md., and Gastonia, N. C. H&D operates 16 plants in key market areas throughout the country.

Since 1958, Mr. Shenigo has functioned as assistant development engineer on the division's manufacturing services staff headquartered in Sandusky, Ohio.

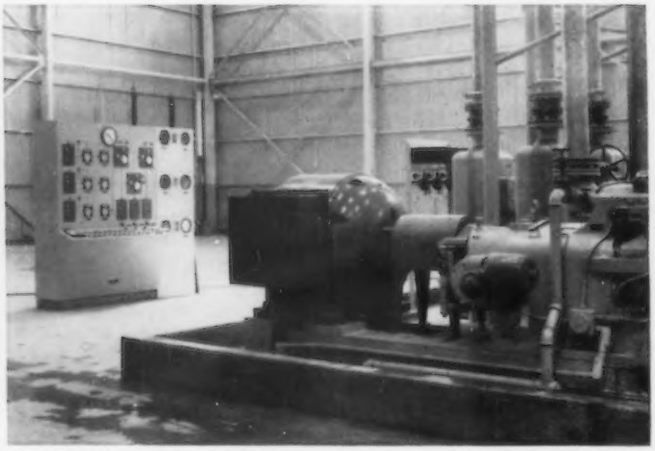


Main Control Panel *for stock preparation and wet-end of paper machine. Controls and indicates percentage of each component added to total blend. Up to 16 ingredients are continuously blended.*

Continuous Percentage-Blending at

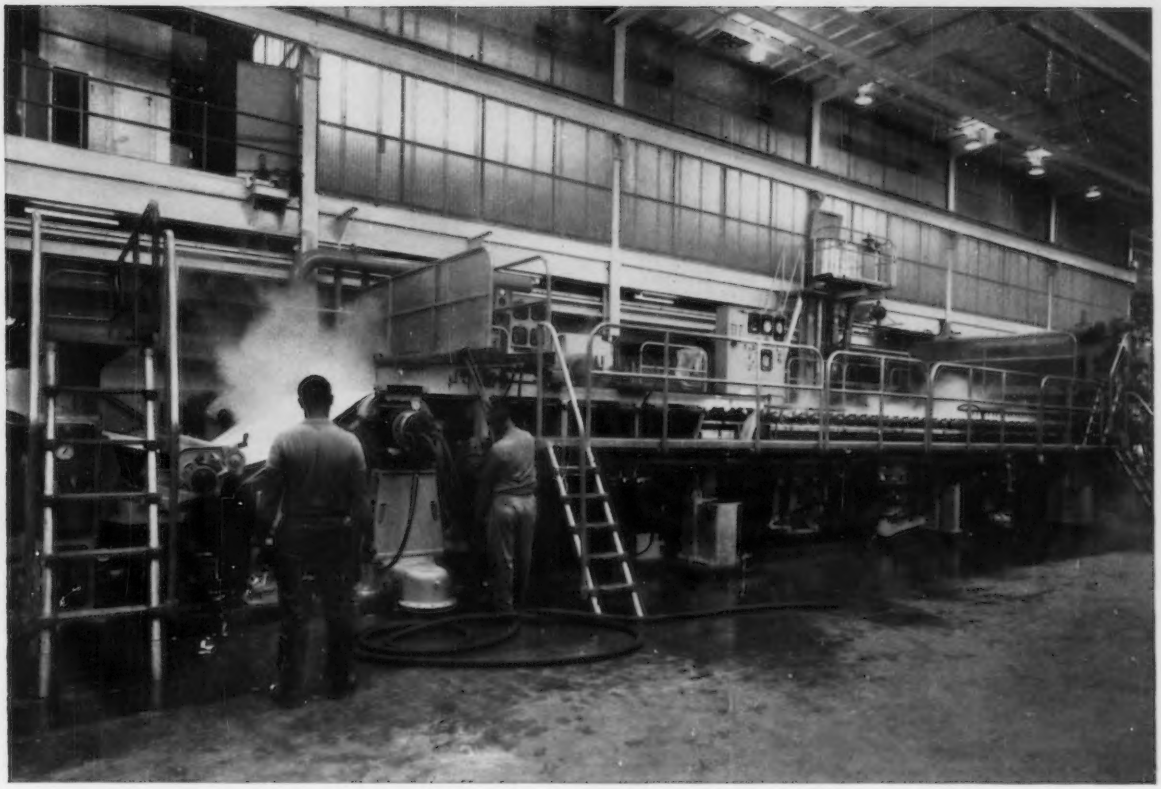


Pulping Panel *automatically sequences water addition and pulping time. Interlocked controls prevent overfilling of stock chest.*



Main Refiner Panel *controls the flow and pressure of stock as it passes through refiners.*

Taylor Instruments



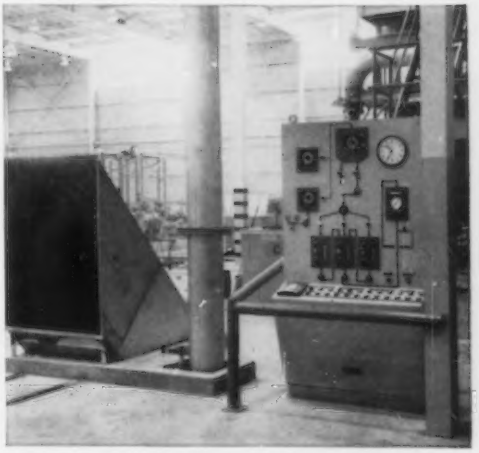
Wet End of Paper Machine *at Simpson Lee's new paper mill in Ripon, California, where high grade printing paper specialties and reproduction papers are produced.*

Simpson Lee is *Taylor* Controlled!

Simpson Lee Paper Company produces high quality printing paper specialties and reproduction papers. To supply the western market, a mill was built at Ripon, California. A Taylor controlled continuous percentage-blending system was included to maintain higher, more consistent quality.

The system was designed through the combined efforts of Taylor paper industry specialists and the Simpson Lee engineering staff. It was installed by Johnson Service Company. Taylor instrumentation includes stock preparation, pulping, broke pulping, refining and entire paper machine.

If you are considering continuous percentage-blending, get the benefit of Taylor's background and engineering experience. See your Taylor Field Engineer or write for Technical Data Sheet TDS 8A104, titled **"Continuous Percentage Stock Blending".** Taylor Instrument Companies, Rochester, New York, and Toronto, Ontario.



Broke Pulper Panel *controls water addition and pulping time for defibering broke.*

MEAN ACCURACY FIRST

A view of the pulp mill during start-up taken November, 1960. Build-up of the chip pile has started (top right) and the power boiler is complete. The pulping group will be completed in a month. The pulp dryer, however, is finished. Purchased pulp is being put through it to break in the equipment and eliminate "bugs."

Management Controls for Construction of a New Pulp Mill

How management followed engineering and job progress on the new bleached kraft pulp mill at Castlegar, B. C. Budget control is given special emphasis.

F. B. Hertha,
Director of Planning,
Columbia Cellulose Co., Ltd.,
and Celgar, Ltd.

Management controls for construction are best developed after the objectives and responsibilities of the management group are clearly defined. With this done, the management organization can be developed and controls established. Although controls necessary to keep a project "on schedule" and "within budget" are important, managements objectives require a broader assumption of responsibility than would be normally required to achieve these immediate ends.

What objectives should company management have in mind in establishing controls for their requirements on a major construction project? Consulting engineers today, who act as agents for companies, probably have more to offer in the way of design, purchasing, scheduling and accounting services than at any time in the past—services which, unquestionably, have been tested frequently during the post-war years of rapid expansion in this industry.

There are, however, certain aspects of the owners business for which the responsibility cannot be delegated, no matter how capable the consulting engineers may be. The consultant can make the owner's work easier, but the wise company will exercise its responsibilities fully.

Well, what are these responsibilities which I say cannot be delegated?

What Can't Be Delegated?

First of all company management is responsible to the shareholders for investing their money expeditiously and without waste. As a practical matter, this implies completion of an operating mill, within a time limit and within a fixed cost budget.

It also implies completion of a plant that can market a competitive product, a plant that is staffed with trained personnel and one which is adequately stocked with raw materials for production and with supplies

Paper presented at the Fall Meeting, Pacific Coast Branch, Technical Section, CPPA, October 19, 1961, at Trail, B. C.

for maintenance and operation.

Second, management has responsibilities to the business community. During the construction of the plant, the owner's representatives have the responsibility of maintaining, or for that matter perhaps determining, the company's reputation in industry. The "corporate image," as it is often called, will be colored by the contracts he or his agents make and the manner of the negotiations he or his agents conduct. The owner cannot really allow the consulting engineer to determine his image for him, since it is not, or should not be the engineers task. For smaller companies, this is especially important, since major expansion brings together many new people with differing ideas.

If the company has a policy or image worth protecting and perpetuating, it is important that it be clearly defined and made known at such a time.

Clearly enough, the community where the plant is being built will be the base of extensive company activities in the future. Even during the planning stages, the company has a job to do to keep local people informed of particular points of interest to them and their environment.

These three major responsibilities should be considered in the objectives of any management controls set up. To ensure then that objectives are met, the next step is to organize the available people and establish key controls at a management level.

Organization Details

Our organization at Celgar (Figure 1.) is shown here in some detail, outlining brief job descriptions. We do not leave the consulting engineer just one box because he was either less in number or importance; he had capable people in all areas of responsibility noted. The important point we want to make here is that throughout most of the job, Celgar had at least one person following each important management responsibility. It should furthermore be noted that of the 14 "line" positions shown on the chart, 12 of the people are still with the company; most of these are in the plant as their titles would indicate. Five of the positions were filled by people who were with the company prior to the start of the major construction program.

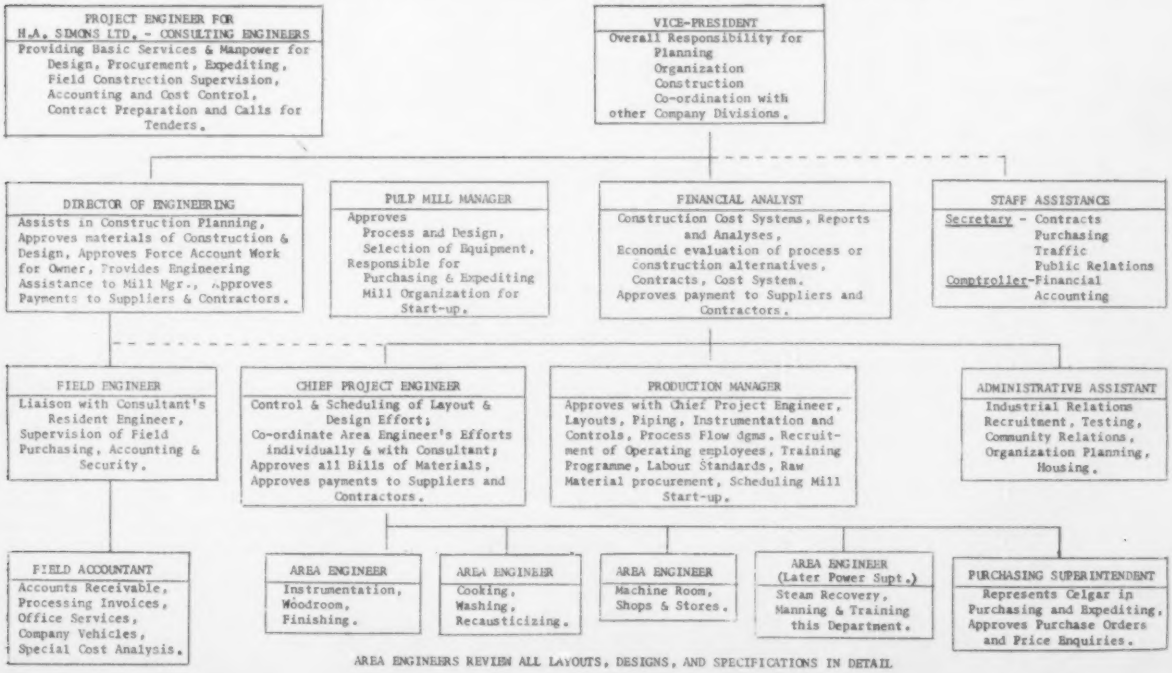
During construction, these positions and their duties were certainly not static. At such a time the areas where emphasis is required to control and gauge the course of the project are constantly changing. Initial emphasis is on process design and selection of major equipment. This period is followed by approval of layouts, and then by the detailed structural, process and electrical design work needed to prepare specifications and contracts. A period of watching progress follows, and where possible, expediting materials and work. Then, all concern is focused on accepting installations from contractors and scheduling start-up.

Early in this construction program, Celgar decided on a policy of letting individual unit price or firm price contracts for all major parts of the work. This procedure required early completion of all essential engineering and drawings. Expediting of this work was an important aspect of job policy. For this reason eight of the 14 people shown on our organization chart were, up to the completion of the major engineering effort, located directly in the offices of the consulting engineer. This situation existed for a period of about one year, following which, all of these eight established offices at the construction site.

For the major areas where control was exercised, Celgar used the following official approvals on work as it progressed. It goes without saying that these were exercised only after extensive consultations within the management group.

1. Final flow sheets and layouts were approved for the Company by the mill manager and chief project engineer.

FIGURE 1—MANAGEMENT ORGANIZATION FOR PULP CONSTUCTION PROGRAM.


PROJECT ENGINEER FOR H.A. SIMONS LTD. - CONSULTING ENGINEERS
Providing Basic Services & Manpower for Design, Procurement, Expediting, Field Construction Supervision, Accounting and Cost Control, Contract Preparation and Calls for Tenders.
VICE-PRESIDENT
Overall Responsibility for Planning Organization Construction Co-ordination with other Company Divisions.
DIRECTOR OF ENGINEERING
Assists in Construction Planning, Approves materials of Construction & Design, Approves Force Account Work for Owner, Provides Engineering Assistance to Mill Mgr., Approves Payments to Suppliers & Contractors.
PULP MILL MANAGER
Approves Process and Design, Selection of Equipment, Responsible for Purchasing & Expediting Mill Organization for Start-up.
FINANCIAL ANALYST
Construction Cost Systems, Reports and Analyses, Economic evaluation of process or construction alternatives, Contracts, Cost System. Approves payment to Suppliers and Contractors.
STAFF ASSISTANCE
Secretary - Contracts Purchasing Traffic Public Relations
Comptroller-Financial Accounting
FIELD ENGINEER
Liaison with Consultant's Resident Engineer, Supervision of Field Purchasing, Accounting & Security.
CHIEF PROJECT ENGINEER
Control & Scheduling of Layout & Design Effort; Co-ordinate Area Engineer's Efforts individually & with Consultant; Approves all Bills of Materials, Approves payments to Suppliers and Contractors.
PRODUCTION MANAGER
Approves with Chief Project Engineer, Layouts, Piping, Instrumentation and Controls, Process Flow dgms. Recruitment of Operating employees, Training Programme, Labour Standards, Raw Material procurement, Scheduling Mill Start-up.
ADMINISTRATIVE ASSISTANT
Industrial Relations Recruitment, Testing, Community Relations, Organization Planning, Housing.
FIELD ACCOUNTANT
Accounts Receivable, Processing Invoices, Office Services, Company Vehicles, Special Cost Analysis.
AREA ENGINEER
Instrumentation, Woodroom, Finishing.
AREA ENGINEER
Cooking, Washing, Recausticizing.
AREA ENGINEER
Machine Room, Shops & Stores.
AREA ENGINEER (Later Power Supt.)
Steam Recovery, Manning & Training this Department.
PURCHASING SUPERINTENDENT
Represents Celgar in Purchasing and Expediting, Approves Purchase Orders and Price Enquiries.
AREA ENGINEERS REVIEW ALL LAYOUTS, DESIGNS, AND SPECIFICATIONS IN DETAIL

2. Major equipment purchases were approved by the vice-president and the manager.

3. Major contracts were approved by the vice-president.

4. Bills of materials (always issued prior to purchase orders) were approved by the chief project engineer.

5. Purchase orders were approved by the purchasing superintendent.

6. Drawings certified for construction were approved by the chief project engineer.

7. Extra work orders, whether done on a cost plus or a firm price basis, were approved in the field by the field engineer or the director of engineering.

8. Invoices for payment were generally approved by the chief project engineer or the director of engineering and were checked by the field accountant, field engineer and the staff traffic department to ensure proper freight charges.

9. All payments to contractors and suppliers were made by Celgar through the comptroller's department.

10. All backcharges against contractors, commonly called accounts receivable, were invoiced by Celgar, who in turn received payment directly.

It should be of special interest to note that after approval of the project by the directors, no further authorizations for expenditures were required from them. The control of these, relied entirely on the use of the established cost control systems by the management group.

After this short review of objectives and organization we can now consider what I believe to be the most interesting phase of the work.

Continually throughout a construction project one seeks the answer to these questions: how are we doing relative to **schedule**, and to **budget?** How effective are our **controls?** We have found in our experience that no single criterion will give the answer, but the analyst must put together information on a number of points such as the status of engineering progress and physical job progress relative to schedule requirements He must appraise financial data on the rate of making new commitments as a guide to what work is being initiated. He must use statistics on manhours expended on each phase of the work and finally, to gauge his status relative to budget, he must use the reports of over and under expenditure. In order to keep the project within the budget, it is necessary for management to refer to the budget before incurring a commitment.

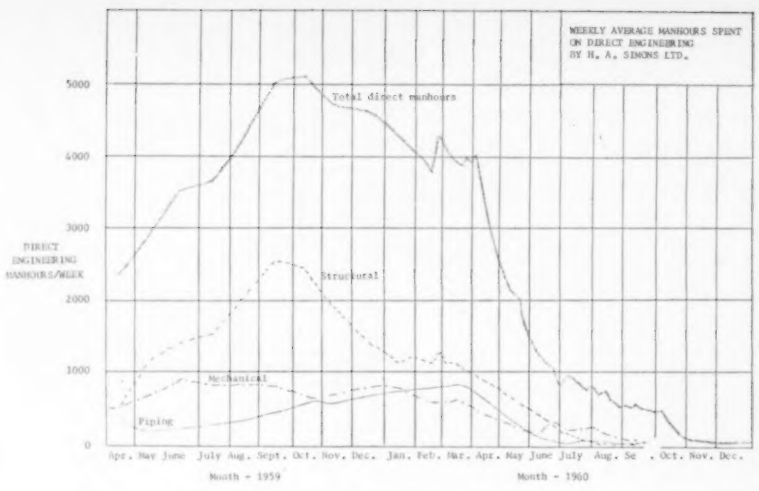


FIGURE 2

All these factors are very closely related, and in fact, are so inter-dependent that they must be appraised correctly if schedule and budget are to be maintained.

Gauging Engineering Progress

It is now appropriate to review the information we requested and received from the consulting engineers in these areas.

Engineering progress was gauged by analysis of manhours expended and through reports on drawing progress. The consulting engineer provided estimates of the total number of engineering manhours required for the project and these in turn were broken down by design department. Weekly reports of actual manhours spent were compared to these and percentage completion was determined and reported to Celgar. These "calculated" completions were compared to estimated physical drawing completion. These latter estimates were made up on a drawing by drawing basis with percentages complete noted. A comparison and analysis of these two approaches gave valuable information on our engineering status and showed where more engineering effort was needed, and on several occasions, as a result of these reviews, engineering was subcontracted in order to meet schedules.

Figure 2 shows how weekly direct engineering effort varied during the project. Structural design took the major effort and was followed closely by mechanical and piping design. Other departments such as the woodroom design group, the instrumentation and electrical groups, although not shown, also took substantial amounts of effort.

In all, it will be of general interest to note the engineering time required to complete the project. Approximately 537,000 total manhours were needed in all areas of which 55%, or 300,000 were direct engineering, 35,000 project engineering, 100,000 field engineering, 102,000 for purchasing and expediting, accounting and record keeping.

During the course of construction the management was provided with all the accepted bar chart progress schedules which today are considered as a necessary guide during construction. In preparing these, physical job progress can usually be quite readily determined for structures, roads and outside services. It is, however, extremely difficult to be accurate on large mechanical contracts, and it is especially interesting to note how optimistic one can at times become about progress on this type of work following a "walk around the job" only to find work continuing beyond the schedule predicted.

As a supplement to detailed progress charts, a valuable tool for evaluating progress on this type of work was the use of the records of manhours spent by each trade on a given contract. We had two other sets of data for comparison of these records. First of all, we required each contractor to break his lump sum bid into labor and material costs by fairly discreet job sub-divisions. Furthermore, we asked for a manpower schedule by trades of men who would be used, week by week during the course of the job. By observing physical progress, and by checking

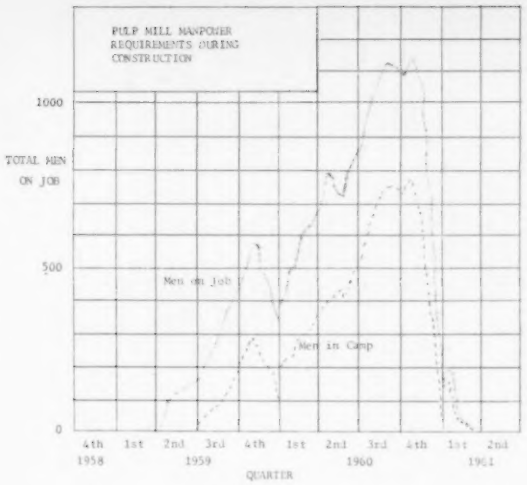


FIGURE 3

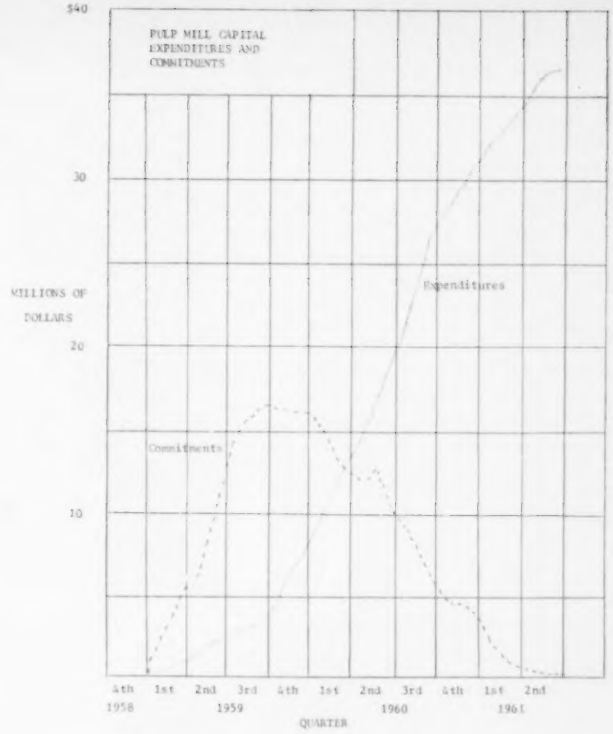


FIGURE 4

actual man-days employed, based on a head count, and then by comparing these with what was submitted at the time of tender, we and our consultants had a good impression of where progress stood on these highly complex contracts. We believe that acting on this type of information and discussing it fully with the contractors concerned greatly assisted in our schedules being met.

Manpower During Construction

Figure 3 will be of interest to those who wonder how overall manning on a major project proceeds during the course of the work. The "Men on Job" line was continuously compared with a "Budget" curve (not shown) on an overall basis. The "Men in Camp" curve and all the analysis and short term forecasts on this subject provided an interesting sidelight on how information can be obtained during a fast-moving project to make decisions on expenditures, in this case expenditure for increased camp facilities. Previous experience had indicated that a camp for 1000 men could become a necessity on this project. The information on manning supplied by contractors in the contracts and by interview, however, permitted us to limit the rate of expansion of facilities and take the short term peak with trailers. These could be set up to handle boarders in smaller increments than the regular 70-man hut and thereby reduce the danger of overspending for unnecessary facilities. Most of the trailers, furthermore, could be readily disposed of at the job's completion at forty to fifty percent of the original cost.

Engineering and Job Progress

A discussion of engineering and job progress schedules is naturally tied in closely with cost control. Cost control on a major construction project, if it is to be successful, requires two basic elements:

1. It must be based on a well constructed estimate which we called the "Budget." This budget, prepared by the consulting engineer, must be broken down into the smallest details of the job. It must be factual and apply to the work as planned and not as someone imagines it should be. Furthermore, in administering it, it must be modified in structure if major design changes take place.

2. The budget control function must be constantly aware of all aspects of the job which will affect the project's cost. This function is clearly not a job for the usual accountant and to be successful, should preferably be centered in the Consultant's Estimating Department with a very close liaison maintained with the Company's engineering and financial representatives.

Enlarging on these two basic elements we can now go into greater detail of how the method employed actually worked.

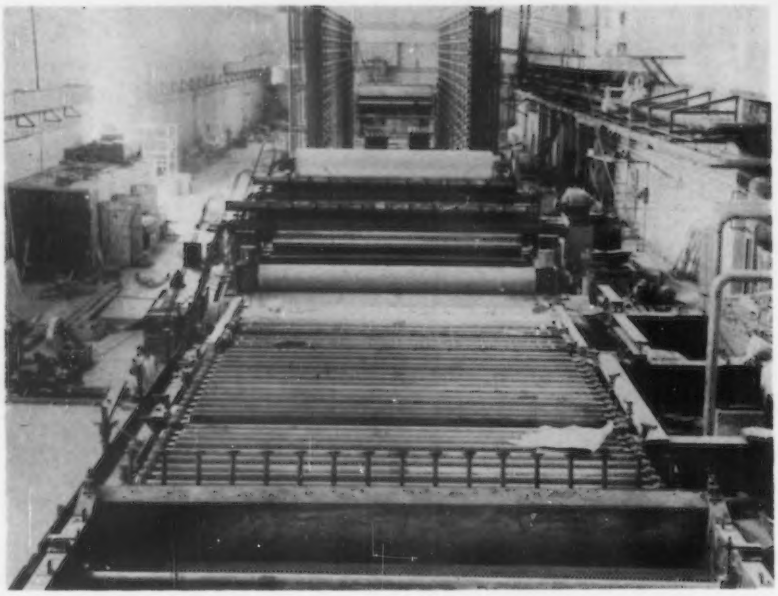
The "Budget" was the detailed estimate. Before a commitment was made for a major piece of equipment or a major contract, the funds budgeted for the work were checked and if an "overrun" was indicated, efforts would be made to modify the work if economic operation of the plant would not be impaired.

The commitment was put on a "Bill of Material" and immediately went into the cost report before actual expenditure was made. An immediate estimate of "overrun" or "underrun" was determined at the same time for reporting purposes. All Bills of Material were estimated and committed, often long before a firm price was known and a purchase order placed.

Since these commitments were often estimates, they were frequently revised during the course of the work as more information became available on actual costs. Because of their volume, such revisions would have become unwieldly and budget control lost had not an I.B.M. system been used by our consulting engineers. The I.B.M. machines enable timely reporting in any degree of detail desired.

Cost Figures Essential

Figure 4 shows the importance of getting immediate budget comparisons based on commitments. After nine months from the start of construction, almost half of the work



In order to avoid a sharp labor peak requiring larger accomodation facilities on a short-term basis, and to make for efficient construction, great care was given to keep each stage on a precise timetable. Underground services were complete before structures were advanced, certain structures were largely completed before equipment was installed, certain units, such as the woodroom, steam plant and machine room were brought into operation in advance to allow early chip production and machine run-in on purchased pulp. At right Celgar's John Inglis fourdrinier and the Flakt airborne dryer are shown under way about July of 1960. Scheduling provided that the overhead crane was finished on the fourdrinier before being required on the Flakt dryer.

Celgar mills in August 1961. Grounds and parking facilities are completed, the sawmill is operating, supplying chips and hogged fuel as by-products and drawing steam and high pressure water from the pulp mill. Only sign of construction is camp on level above mill.

is normally committed. By this time it should be apparent whether or not the job is going to get into trouble. Expenditures lag commitments by nine to 12 months.

Celgar was provided with a number of cost reports during the course of the work. These are the more important ones:

1. On a daily basis during critical periods we received a list of extra work orders and their estimated cost.

2. On a weekly basis we received a list of all new commitments made during the week.

3. On a monthly basis, we received a monthly cost report, a contract cost report, and a listing of all commitments and expenditures.

There were also numerous specialized reports. The major unit-price contracts were put onto the I.B.M. machines and quantities were reported with their extensions in dollars as the work progressed. During the final stages of the construction program, with major contracts completed, start-up work and modifications were done by field work orders. To keep these costs under scrutiny, special work order reports were prepared. To realize the magnitude these costs could reach, it will be of interest to note that for a short period before and during start-up, when major firm price contracts were complete, cost-plus work was being authorized at $15,000 per week.

I would now like to show you an example of what one of the key reports looked like. This is the summary "Capital Cost Report" (Figure 5) and gives the complete picture of accounting information such as current expenditures and new commitments for the month, and expenditures and commitments to date. It shows also how good your control is, by comparing the "final forecast cost" with the "budget." The final forecast cost is arrived at by adding known over- or underruns to your budgeted amount. This is the only way of arriving at this value during the initial stages of the work. There is a time in every project, however, anywhere from six to 12 months before its completion, when a complete re-estimate appears advisable.

One must face the fact that a budget, made perhaps months before final drawings are complete, cannot foretell the exact mill design. Periodic re-budgets perhaps better called "reconstructions", are certainly advisable. These do not open the door to extras if management has its objectives clear.

On the Celgar project there were two major "reconstructions" both resulted in reducing the budget and thereby releasing cash to the company for other purposes.

Watching the Extras

A second valuable cost control document was what we called the "Construction Contract Summary." This document listed all firm price

and unit price contracts and gave a running account of the "extras" arising from them. Once a firm price contract is let, it can be committed and you know immediately if it is within the budget. The unknown is the amount which "extras" will come to. We used this contract summary report as an important management device. Extras in firm price contracts amounted to about 15 per cent on 8 million dollars worth of work. Most of these arose out of premium time payments, and costs of omissions, interferences and changes to plans during the course of the work. In our budgeting we had considered this a reasonable percentage to expect. Reports of this nature do not in themselves "control" extra costs since these often are a function of good engineering and job co-ordination. They do however, show if you are missing something important to yourself and the contractor in the preparation of your contract documents. We note throughout the project a decrease in extras paid on firm price contracts, and it is in this that we can see the "controls" or better termed "job analysis" operating to good effect.

In summarizing this discussion of controls for pulp mill construction, I have reviewed our management's objectives, how we organized our people in consideration of these, how responsibilities were delegated and finally I reviewed some of the information and methods we used as controls to keep "on schedule" and "within budget."

FIGURE 5—CELGAR LIMITED PULP MILL CAPITAL COSTS

For Period Ending Month, Date, Year

COST AREA	Cost Code	PERIOD COSTS Expenditures	PERIOD COSTS Commitments	PERIOD COSTS Total	COSTS TO DATE Expenditures	COSTS TO DATE Commitments	COSTS TO DATE Total	Indicated to Complete	Final Forecast Cost
STRUCTURAL									
Woodroom Log Handling									
Chip Handling									
Pulping									
Pulp Machine and Finishing									
Steam Plant and Recovery									
Stack									
Recausticizing									
Non-Process Buildings									
Pulp Warehouse 1st Section									
Unit Price Work, Holdback									
Total Structural									
MECHANICAL									
(a) Process Equipment									
Booming Ground									
Woodroom and Log Handling									
Chip Handling									
Pulping									
Brown Stock Washing									
Bleaching System									
Pulp Machine Finishing									
Recovery and Evaporator									
Precipitator									
Steam Plant									
Recausticizing									
Total Process Equipment									
(b) Service Equipment									
Site Preparation									
General Services									
Non-Process Buildings									
Total Service Equipment									
Total Structural and Mechanical									
INDIRECT COSTS									
Construction Camp									
Overhead									
Use of Equipment									
Engineering									
Fee									
Indirect Material									
Premium Time and Start-up									
Accounts Receivable									
Non-Project Charge									
Sawmill Services									
Spare Parts									
Total Indirect									
Total Cost									

How to Prepare and Proportion Starch to the Paper Machine Furnish

Best results with internal starch addition are obtained when the starch is cooked as needed at the machine. A circulating loop for cold starch slurry and a jet cooker provide the flexibility to meet these conditions.

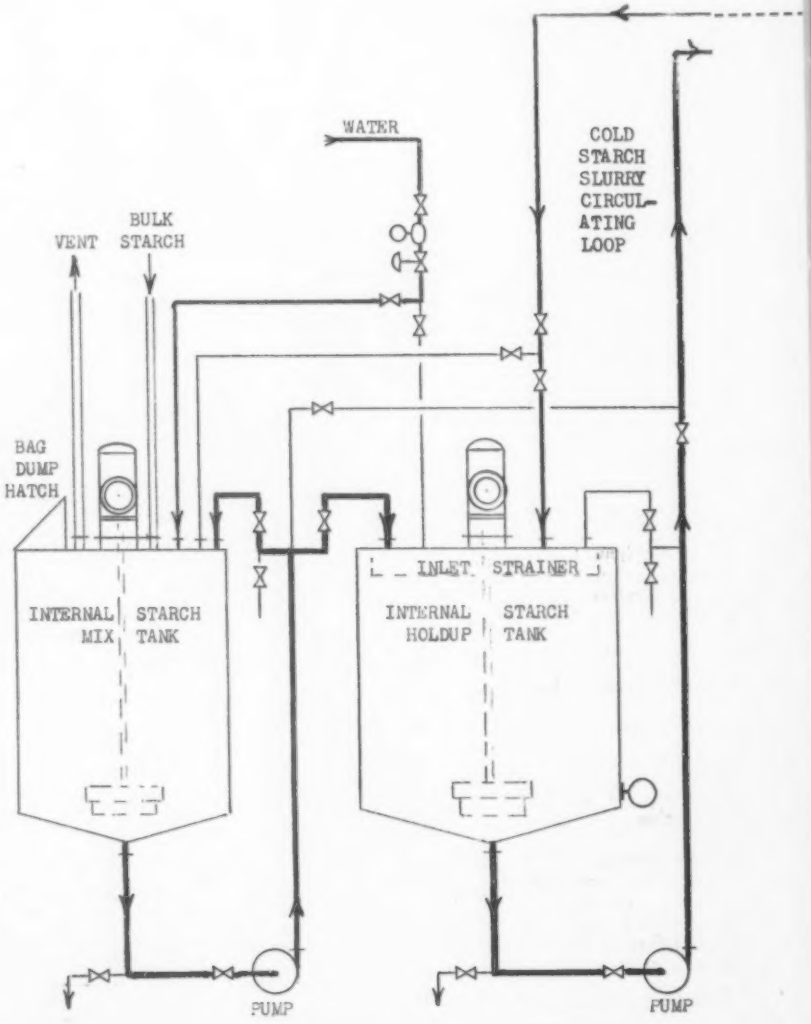
William G. Farin,
Chemical Materials Handling Engineer,
Neenah, Wis.

The preparation of starch for injection into the stock furnish to the paper machine is somewhat different than the methods used for surface sizing. In most cases a native or thick boiling starch can be used, although modified starches are sometimes used to obtain desired characteristics. The internal starch sizing provides added strength and stiffness to the sheet giving it a snap or rattle. It reduces fuzziness and improves erasing qualities and printability. In this case the cooking is only intended to swell the starch without rupturing swollen particles and for optimum results the holdup time, working and agitation after cooking should be held to a minimum.

Cooking at the Paper Machine

For this reason it is advisable to do the starch cooking at the machine at the exact rate in which it is needed. In view of the lower viscosity and ease of handling cold starch slurries at reasonably high concentrations, it is advantageous to prepare the cold slurry at the source of supply and maintain a constant, always available supply of this cold slurry at the paper machine or machines through the use of a circulating loop.

At the machine a continuous cooker can be used to cook at a rate proportional to the stock flow to the machine. The cooker must then be able to cook at a wide variety of rates depending on both the percentage of starch used and the rate of stock flow. It must be able to start and stop with the stock flow without plugging the system between uses.



TYPICAL internal starch preparation system includes a mix tank supplied by bulk or bag starch with agitator and pumps for mixing water slurries and supplying holdup tank. Holdup tank agitator maintains uniformity and continuously running pump supplies slurry through circulating loop, maintaining an always available supply at machines serviced.

The equipment required for this operation consists of a batch preparation stainless steel mix tank sized to enable the starch weighing system to provide one full batch of cold starch slurry of two to three pounds per gallon consistency. The mixer is provided with a dump hatch for auxiliary makeup supply, a top entering turbine agitator for necessary mixing and a centrifugal pump to circulate the slurry during mixing and prevent any settling in discharge lines.

The prepared batch of predetermined consistency can be checked before being pumped to a stainless steel holdup tank through an inlet strainer. The holdup tank capacity is at least 1½ times the size of the mix tank and the uniformity of slurry is maintained by a turbine type agitator.

A centrifugal pump, preferably with a centrifugal seal to minimize stuffing box difficulties, pumps the cold slurry from the area of supply to the paper machine or machines, using a circulating loop. The line is sized to meet full requirements and still return at least half the slurry back to the holdup tank strainer inlet. The return line is sized to take 90 per cent of the line drop, thus retaining close to full pump pressure in the starch slurry supply line for use in the starch cookers at the paper machines.

Controls for Preparation

The controls for preparation include a water meter to set gallons required, reset for zeroing and start and stop buttons. Start and stop buttons are provided for the agitator and mix tank pump. The operator zeros, sets and starts his water supply and, if using the bulk system described in previous articles, he can set the weight of starch required, start the weigh cycle and push the internal starch mixer selector button. He now sets the valves for recirculation and starts the agitator and pump, and mixing proceeds without his attention.

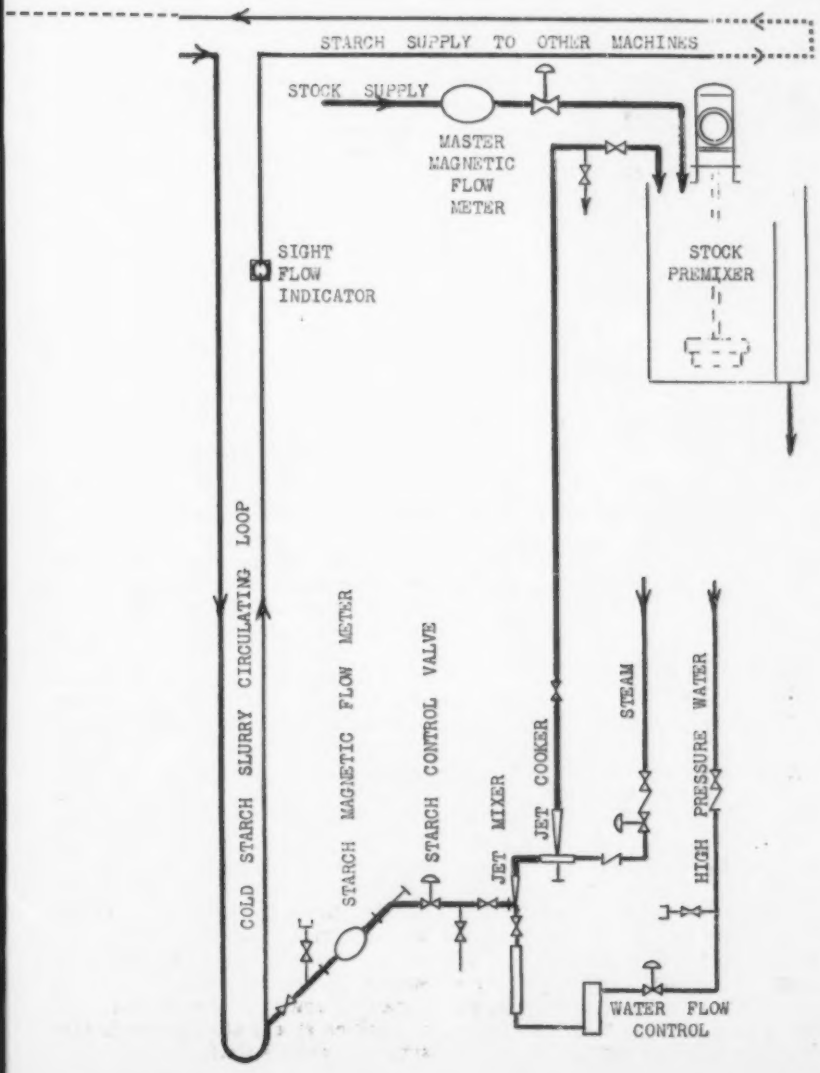
When all the starch and water have been added the operator can check the level or the consistency if required and then pump to the holdup tank.

The holdup tank has only a level gage and off-on buttons for the pump and agitator. The level is indicated both in the preparation area and at the machine as a check on material supply. The agitator and pump run continuously providing an always available cold starch supply at the machine whether it is being used or not. This continuous flow prevents settling or plugging in the supply lines and insures uniformity. Any large particles or agglomerates are caught in the holdup tank inlet screen which can be removed at any time by the operator for cleaning. If plugged, the screen overflows but will not shut off the supply to the machine. For long shutdowns the circulating loop is water flushed before being shut down.

Jet Type Cooker

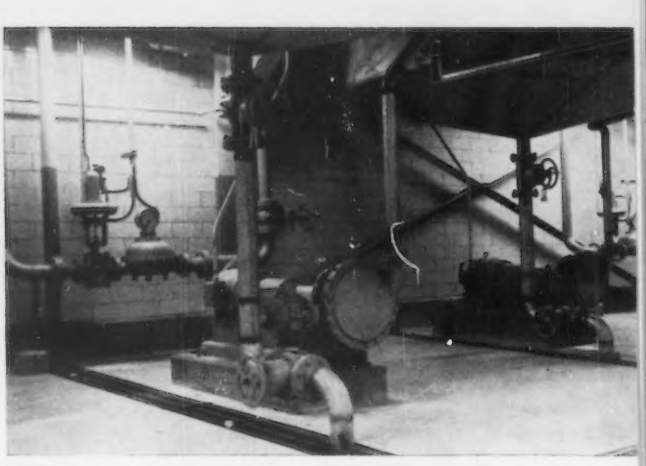
At the paper machine the circulating loop runs to the basement floor to provide a hydrostatic head at the cooker discharge and the takeoff is made upwards at a minimum angle of 45 degrees through an emergency hand shutoff valve and magnetic flow meter to a short horizontal section in which the control valve is placed. When closed any settlement drops back into the continuously flowing circulating loop and is carried away.

From the discharge of starch slurry control valve, the starch goes immediately into the suction of a water jet mixer where the starch is diluted previous to cooking. The quantity of high pressure water is preset to meet requirements at maxi-

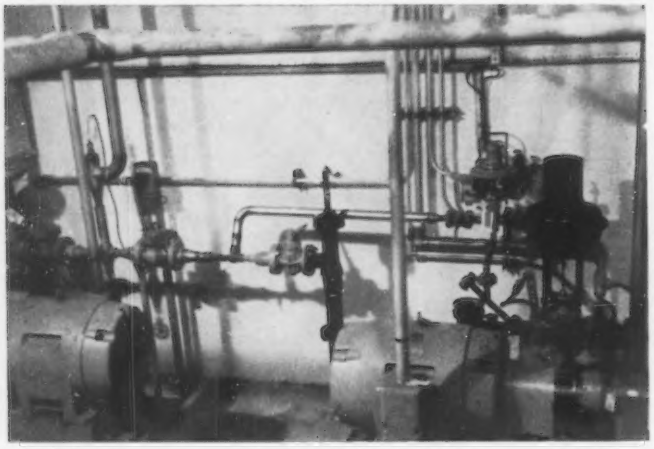


TAKEOFF at paper machine is through magnetic flowmeter proportioning starch slurry to stock flow. Constant flow of water dilutes slurry and maintains required velocities through jet cooker. Cooker operates entirely automatically.

INTERNAL STARCH mix tank is supplied either by bulk or through dump hatch with closed cover. Holdup tank is in background. Uniformity is maintained by turbine agitators.



BELOW MIXER and holdup tank are centrifugal pumps with centrifugal seals. Water meter is at left. Starch slurry piping is of stainless with straight way diaphragm valves.



Continuous starch cooker mounted against wall in basement below machine receives starch from circulating loop and automatically proportions it to stock flow by magnetic flow meters. Starch is cooked as needed, going directly to stock. System automatically cleans itself and shuts down when stock flow stops and will start up again when stock flow resumes. Jet mixer and jet cooker are standard commercial units.

mum starch flow with maximum concentrations of about one half pound per gallon. This water flow is constant, however, even when the starch slurry flow is varied, so that the total flow remains fairly constant and the variation in starch flow varies the final consistency only.

This fairly constant total flow of diluted starch enables the use of a jet type cooker which cannot be used where wide variations in jet velocities are encountered. In the jet cooker, steam is injected and the diluted starch raised instantaneously to operating temperature. The jet cooker is designed with a tapered plug in the orifice so the opening can be set up in accordance with the set water flow. Once set, the only variable is the cold starch slurry flow which is proportioned to the stock flow to the machine. When the stock flow stops completely, the starch flow also stops but the water and steam flows continue for a few minutes to flush out the cooker and piping to prevent plugging.

The cooked starch is piped directly from the cooker to the paper machine. The point of inlet is guided mainly by its effect on other additives. If added along with some dyes it will tend to absorb the color faster than the stock and therefore they should be added at a different location.

Starch also has a very detrimental effect on the retention on the wire of some additives such as titanium dioxide and particularly so if both are added early in the supply system.

Proportional Control of Starch Flow

The control of the starch to the paper machine is set up for proportioning the starch flow by setting the required pounds per thousand of total stock flow in the magnetic flow control setup. Auxiliary setups enable setting a definite starch flow rate or merely setting the valve opening position in case difficulties are encountered in the magnetic flow control circuit. The rate of flow of starch is recorded and can be compared to the recorded rate of stock flow. The starch flow rate is also continuously totalized providing an accurate account of machine usage.

A simple water flow control and rotameter will enable setting and maintaining a constant high pressure water flow rate. The steam is automatically controlled by the cooker discharge temperature which can be set at the starch preparation panel. Both steam and water valves also operate off a timer which shuts off the flow a few minutes after starch flow has stopped. When the starch flow is started, the water and steam flows also start immediately.

On automatic proportional control, the starch flow and cooking operate entirely off the stock flow, requiring no work on the part of the stock preparation man even though the stock flow is varied or even stopped and restarted. The proportioning, starting, stopping and washout are taken care of automatically, freeing him to take care of the difficulties causing the variations. There is no over or under starched stock, no wasted starch or stock and the stock supply is always properly proportioned, permitting the machine to be back on specification paper in the shortest possible time.

Our Peripatetic Editor Flings a Gauntlet!

How Much Do You Know About Knife Slices?

A practical discussion of the operation of this type of slice, still much used on older and slower paper machines.

It is significant to the problem of knife slices that the author of this article could not find a single previous article dealing with the subject. Indeed, this is one of the fields where the practical papermaker is still reigning supreme and is likely to continue doing so until the last of these slices has disappeared.

Assuming that the slice assembly is in good mechanical condition, the quality of the paper can be influenced by the following independent factors: (The slices are numbered from dry end to pond.)

1. Height of first slice
2. Height of second slice
3. Height of third slice
4. Position of first slice
5. Distance first to second slice
6. Distance second to third slice
7. Position of apron
8. Consistency in pond
9. Amplitude of shake
10. Frequency of shake

If it were possible to vary these ten factors in a systematic fashion during a period when one quality and basis weight of paper was produced and paper was taken out and analyzed for each combination, a skilled statistician with a computer should be able to predict the combination of settings producing the most desirable formation or cross-machine tensile strength or smoothness or density. The papermaker would then insist that these results would be applicable only to that particular type of paper and basis weight. Since each such investigation would call for innumerable test runs, one can easily understand why no comprehensive analysis of knife slices has been reported. Indeed, few process engineers are lucky enough to be allowed to fool around with one of these factors at a time. A few facts, however, are known or believed to be known.

Height of First Slice

On slow machines there is little relation between the height in the pond behind the first slice and the wire speed. The height may be appreciably higher or lower than what it theoretically should be, and it must not be assumed that this is necessarily wrong. The deviation may be needed to achieve the desired fiber orientation or formation on the wire or to prevent undesirable flow conditions in the pond. High speed photography of the flow on the wire and analysis of the paper may indicate if the slice is too high or too low.

Height of Second Slice

The height of this slice determines the turbulence in the first pond. Quite generally, this turbulence should suffice to prevent flocculation and settling but it must not be so strong as to cause an unsteady flow from the first slice. These conditions can easily be judged by an experienced papermaker. Conditions are more complicated if the apron ends before the first slice. In this case, the wire will move along the bottom of the pond and the velocity of flow underneath the second slice as well as the turbulence in the pond are bound to influence the manner in which the fibers are deposited on the wire as water drains through it.

Now, this advance sheet formation will also be influenced by height in pond, distance between slices, consistency, shake and wire speed. Indeed, it would seem advisable to try to avoid the complication of this by placing a forming board underneath the wire.

Height of Third Slice

The height of the third slice determines the turbulence in the second pond as well as the height of liquid in the third or main pond. Here, as in the case of the second slice, there will be more evening out of cross-machine flow irregularities as the slice is moved down. Eventually, however, a position is reached where the turbulence in the pond downstream of the slice becomes so severe that the improved flow evening achieved by lowering the slice is more than offset by the disruptive effect of the increase in pond turbulence. The optimum slice position certainly varies with consistency, pond width, wire speed and shake intensity.

The height of the second and third slices also has to be set so that the liquid depth in the main pond is sufficient to avoid channelling and undue disturbance from irregularities in the pond bottom at the same time as the velocity is high enough to avoid flocculation and settling of filler.

We intend to present from time to time an article such as this which is intended to be a challenge to the practical paper maker.

There are still many fields of papermaking where no comprehensive investigations have been made and where the problems are so many and varied that no single paper maker, however experienced, will have the opportunity to deal with all of them. Our approach is to present a short paper where the problems are described and the specific points of controversy spelled out.

We invite our readers to send their comments on these points and hope that enough answers will arrive to enable us to write a second article coordinating this information.

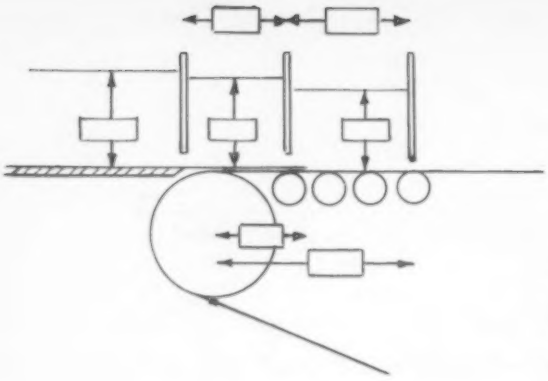


FIGURE 1 — Do you know the dimensions indicated at left for your knife slice installations?

Position of First Slice

Where to place the first slice on the wire is a problem that papermakers are quite concerned with. Since there are limits to how far down the wire the apron can go, the slice will be moved back and forth depending on how much advance sheet formation is desired. It should be remembered that this technique was developed before the forming board became widely used. The forming board can now be used to control the drainage ahead of the first slice which will to some extent make moving the slice unnecessary. Even with a forming board, however, there may be a degree of combing action between the wire and the stock in the pond making the moving back of the slice desirable for certain grades.

Wherever the slice is placed it is imperative that the opening between slice and wire be exactly controlled. For this reason, the slice should be placed directly on top of a table roll which is in good contact with the wire and does not whip or vibrate. If the roll is in poor condition or the slice is placed between two rolls this is likely to show up in basis weight variations in the machine direction. It is therefore recommended to use a forming board underneath the slice.

Distance First to Second Slice

This distance, of course, must be so short that a reasonable turbulence can be maintained in the pond. What happens if the distance is too short is not known, but it is likely that the turbulence at the surface will again become inadequate.

Distance Second to Third Slice

This distance is usually the same as the other one, which is not necessarily correct. There is probably a relation between velocity underneath the upstream slice and the best height, and length of the pond. It would be good to have some indication of when the pond is functioning most efficiently as a flow evener.

Position of Apron

The apron is nowadays usually a sheet of soft plastic, which can be rolled out to reach more or less far downstream, thereby controlling the advance sheet formation. The apron may cause much trouble because of the difficulty of making the apron lie flat in the pond and on the wire. If the apron is pulled too far back, stock will flow backwards over the breast-roll. If the apron extends too far down the wire, water between wire and apron will channel into streams which show up as streaks on the wire side of the paper.

Consistency in Pond

The consistency in the pond is limited by the drainage capacity of the wire section, that is, the sheet must have the proper dryness before the dandy roll. The drainage capacity, on the other hand, depends to considerable extent on the position of apron and forming board since much of the water drains through at the slice. One, therefore, often has a choice between lowering the consistency, moving the slice back or letting the apron further down. At constant head, a lower consistency means higher velocity through the pond.

Amplitude of Shake

The shake presents a problem which calls for a separate discussion. Here it should only be observed that the shake will act not only on the stock on the wire but also on the stock in the ponds. Its effect there has not been investigated. It is clear, however, that an excessively large amplitude would be apt to cause standing cross machine waves in the deflocculating effect.

It has been proposed that the effect of the shake on fiber orientation depends entirely on whether the fibers are fixed with one end to the wire or not. Fibers so fixed to the wire will be pulled out to a cross machine position. Fibers freely flowing along a shaking wire, however, will be aligned in the machine direction.

According to this theory, the fiber layer above the apron should have a strong machine direction orientation while advance sheet formation should offer ideal opportunities for the shake to orient the fibers cross the machine. This is all speculations, which have to be verified by proper experiments.

Frequency of Shake

The intensity of the shaking action is considered to be proportional to the product of frequency and amplitude. The frequency must be chosen so that the intensity is at a maximum, but it must not be so high that the stock on the wire is unable to follow the wire because of its inertia. This can be checked by determining the fiber orientation on top and wire side of the sheet.

The best setting of the shake prob-

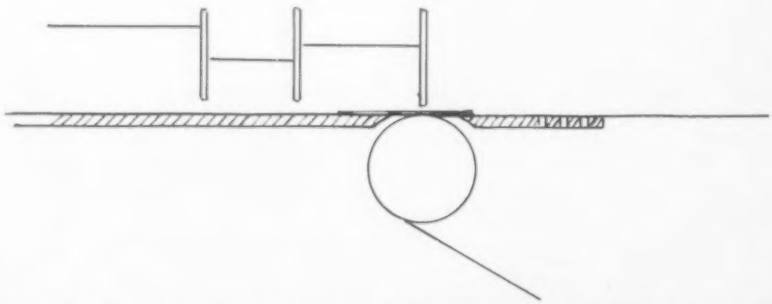


FIGURE 2—How to arrange headbox and slices so as to avoid shaking the pond.

ably depends on pond consistency, stock freeness, fiber length, wire speed and jet velocity.

And now, specifically:

1. We bet you don't know how your own slices are operated. Try to fill in the blanks on the sketch in Figure 1. If you manage, cut it out and mail it to us and you will get a summary of all contributions—of course without any mention of origins.

2. Do you move the apron back and forth and if so, are you sure you know why?

3. Do you move the slices back and forth and if so, is not that an awful nuisance?

4. In fact, would it not be wonderful if you could keep apron and slices in one position for all grades?

5. Now think—what added features would you need on the slice assembly to be able to keep apron and slice fixed.

6. Do you still insist on moving the deckle in and out? You know that it is much easier to pump the trim back from the couch pit, and you can then build the slices in one piece and make them both sturdier and more exact.

7. Do you really think it makes sense to shake the whole pond the way you do it? Suppoes you moved the whole slice assembly back of the breast roll the way it is shown in Figure 2, you would not have to shake the pond.

8. If the pond did not shake with the wire, would not the shake have more effect on fiber orientation?

9. Certainly you could prevent stock from flowing backwards down the breast roll even if you operated as in Figure 2.

10. And finally—since we are dreaming anyway—what would you like a modern, really low speed headbox to look like?

PJT NEW LITERATURE

Compressed Air

Contains information on the use of air power, correct air system installations and is an invaluable composite of more than 23 charts and graphs illustrating the properties of air under varying conditions. It is an ideal reference piece. Printed on 8½ by 11-inch white bond, it is punched for a standard three ring binder. Bob Wisser, Wilkerson Corp., 1548 W. Mansfield, Englewood, Colo.

Embeco Pre-Mixed Grout

Describes the proper methods for grouting different types of heavy industry equipment. Non-Shrink Embeco Pre-Mixed Grout is used to perfect and simplify preferred grouting methods and techniques. The preparatory steps, forming, selecting materials, mixing, and placing the grout are illustrated in accompanying diagrams, charts and photographs. Bulletin EPMG-2c. The Master Builders Co., Cleveland 18, Ohio.

Indicator-Controller

Illustrates two variations of the indicator-controller for handling the different types of signal conversion and for re-transmitting measurements, or control signals from remote points. Also, illustrated are a number of plug-in modules available with the unit for various modes of operation. Bulletin No. E12-3, Bailey Meter Co., 1050 Ivanhoe Rd., Cleveland 10, Ohio.

Herringbone Speed Reducers

Describes the new type D and T units which allow increased interchangeability of gearing, reduced inventory investment, and increase in the number of units that can be assembled from stock. Ten new reducer sizes have been added to the catalog line. Advantages of "balanced design" are included. Bulletin J-26. Dept. PS, Hewitt-Robins, Stamford, Conn.

Resin-Bonded Fiberglas Materials

Features an all-new, comprehensive review of corrosion resistance — mechanical properties of Resin-Bonded Fiberglas materials. Details of how du Verre Resin-Bonded Fiberglas construction provides complete corrosion control in a wide variety of industries are given. du Verre Inc., Box 37-E, Arcade, N. Y.

Microbial Control

Describes the latest methods for microbial control in pulp, paper and paperboard mills. Procedures for the control of microorganisms and the elimination of chemical slime deposits, through preventive maintenance, are outlined. Information included describes how obtainable results improve paper quality, increase production, and reduce maintenance costs. Bulletin P-1. Nalco Chemical Co., 6300 West 66th Place, Chicago 38, Ill.

Penton-Clad Process Piping

Illustrates the properties and applications of Polypenco polyether resin-clad pipe and fittings which resist the corrosive attack of a wide variety of chemicals, and provides inside-outside protection effective at temperatures up to 275°F. Comprehensive chemical resistance charts are included along with methods of evaluating service performance in specific chemical environment. Also contained are the range of pipe sizes available and the installation advantages and instructions. 8 pp. Brochure. The Polymer Corp., Reading, Pa.

Visitor's entrance is out on Front Street

How Well Do We Pay Our Top Management?

Compensation is below the all-industry average except for those companies with a sales volume of $1.5 billion or better.

Raymond F. Good,
McKinsey & Co., Inc.,
Management Consultants, New York

Chief executives in the paper industry earned about the same in 1960 as they did in 1959 although industry sales increased 10 per cent. In ten other major industries the compensation of chief executives increased from one to nine per cent, in 13 their incomes declined from one to seven per cent and in one there was no change. Thus, the paper industry ranks almost in the middle of the 25 industries recently surveyed by McKinsey & Co.'s management consultants. This study, the seventh McKinsey annual survey of top-management compensation, covered 587 companies in 25 industry classifications. In the series were 20 paper companies, the average sales of which were $235 million during 1960.

The survey shows a sharp contrast in executive compensation trends during 1960 as compared with the previous year. In 1959 the compensation of the chief executives in paper companies increased an average of six per cent with an industry sales increase of 15 per cent and profits 21 per cent. This compensation increase in the paper industry was a little lower than the eight per cent for all industry, the sales of which showed a nine per cent increase, while all-industry profits increased by 21 per cent.

The slight decline in chief executive officers' compensation in 1960 was apparently caused in part by the appointment during the year of new chief executives in three of the companies surveyed. These new officers were paid—on an average—three per cent less than their predecessors. In other industries, the compensation of newly appointed chief executives ranged from 159 per cent of that of their predecessors in air transport to a low of 69 per cent in the large, diversified industry category.

TABLE 1

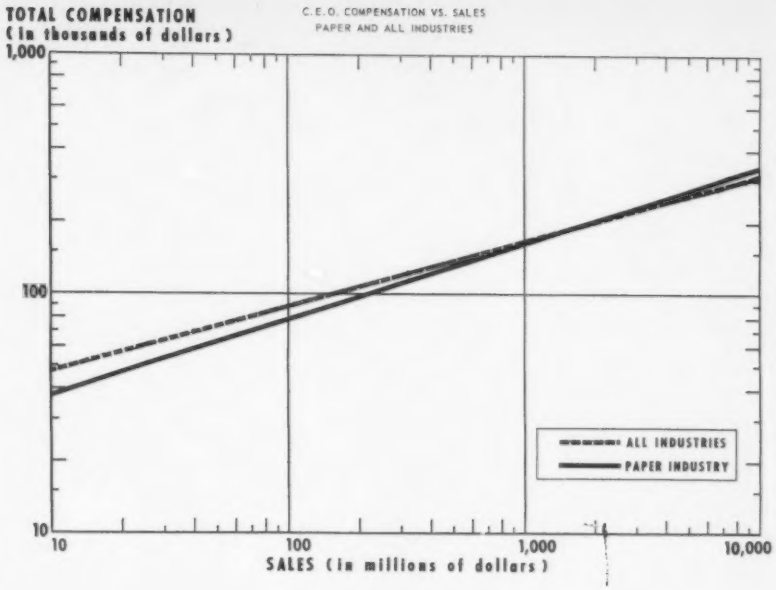
AVERAGE CHANGE IN CHIEF EXECUTIVE COMPENSATION, SALES, AND PROFITS
1960 over 1959

	Average Percentage Increase or (Decrease)		
	Chief Executive Compensation	Industry Sales	Industry Profits
Air transport	9 %	10 %	(43)%
Textiles	6	4	(10)
Railroads	6	(3)	(5)
Electronics	3	14	12
Business machines	3	13	7
Soap, cosmetics, pharmaceuticals	2	8	14
Public utilities	2	7	8
Electrical equipment	2	6	(14)
Chemicals	2	4	(1)
Petroleum	1	5	10
Foods	0	3	15
PAPER	(1)	10	0
Large diversified companies	(1)	6	(8)
Industrial metal products	(1)	4	3
Department stores and general chains	(2)	6	(6)
Food and drug chains	(2)	5	(14)
Consumer durables	(2)	3	3
Automotive	(2)	3	(12)
Building materials	(2)	(2)	(20)
Rubber	(2)	(1)	(27)
Nonferrous metals	(3)	0	38
Steel	(3)	(3)	(18)
Machinery (nonelectric)	(4)	5	(8)
Aircraft and missiles	(6)	3	3
Tobacco	(7)	5	(4)
All-industry average	0	5	(3)
Number recording increases	10	20	10

These all-industry figures hide marked variations between industries, as Table 1 shows. The top two industries—air transport and textiles—reported sizable compensation increases in spite of significant profit losses. The decline in profits is partially attributable to their tremendous profit growth in the previous year, 53 per cent for air transport and 103 per cent for textiles. At the other extreme, nonelectric machinery, aircraft and missiles, and tobacco all showed significant declines in compensation despite sizable sales increases.

Compensation Below All-Industrial Average

One of the most important findings of the survey is that the average compensation of chief executive officers in the paper industry is lower than the all-industries average for companies of similar sizes. The exhibit is a graph containing trend lines based on compensation and



total sales for the paper industry, and for all 25 industries surveyed. The compensation of the chief executive officer for each of the 20 paper companies surveyed was plotted against total 1960 dollar sales for his company. A trend line was then drawn to reflect the average compensation as related to sales. The same process was carried out for the total of the 25 industries.

This graph reveals that the trend line for the paper industry lies below the trend line for the all-industries average. This disparity in compensation becomes narrower as total sales increase, but it is not until sales volume reaches $1.5 billion that the average compensation for the paper executive catches up with the all-industries average. As an example, the compensation of the chief executive in a hypothetical paper company doing $100 million in sales in 1960 was $78,000. The all-industries average for a company of equal sales was $89,000, or about 14 per cent greater. In companies doing $500 million in sales, the average compensation figures would be $130,000 for paper and $138,000 for all industries. At this point all-industries compensation exceeds paper industry compensation only by about six per cent.

A more meaningful measure of paper industry compensation can be seen in a comparison of the paper industry with other nondurables industries. Table 2 compares the compensation of chief executives of paper companies with that of executives in companies of similar size in the chemical, food, rubber, and textile industries and with the all-industries average as well.* These compensation figures are tabulated for hypothetical companies with annual sales of $30 million, $100 million, and $400 million. These statistics reveal that executives in the chemical industry are consistently higher paid than those in paper. Executives in the food industry receive higher compensation in the smaller-size range, but substantially lower compensation in companies beyond $100 million in sales. An executive in a smaller rubber company would receive slightly lower compensation than his counterpart in paper, but at $100 million and beyond would receive significantly more. The average compensation in the textile industry is considerably higher than in paper at lower sales levels, but this gap narrows with increasing sales volume.

*—The compensation figures are taken from trend lines plotted for each industry in the same manner as in the exhibit.

This table also reveals the variations in the spread of executive compensation between large and small companies. The greatest spread occurs in the rubber industry, where an executive in a $400 million company would receive 180 per cent higher compensation than the top manager in a $30 million firm. The narrowest gap is the food industry, which would pay a chief executive in a $400 million company only 65 per cent more than his counterpart in the $30 million company.

With an increase in annual volume, certain increases in compensation are found in the various industries. Again, taking our figures from the individual industry trend lines, an increase in volume from $100 million to $200 million would result in an increase in compensation as follows:

Industry	Increase
Rubber	31%
Chemicals	27
PAPER	24
All Industries	23
Textiles	18
Foods	12

Thus, with a twofold growth in sales, a paper industry chief executive would receive a 24 per cent in-

TABLE 2

COMPARISON OF CHIEF EXECUTIVE COMPENSATION IN COMPANIES OF SIMILAR SIZE

Industry	Compensation According to Annual Volume			% Difference between High and Low
	$30 million	$100 million	$400 million	
PAPER	$54,000	$78,000	$122,000	125
Chemicals	59,000	90,000	145,000	146
Foods	62,000	78,000	102,000	65
Rubber	50,000	81,000	140,000	180
Textiles	71,000	95,000	132,000	86
All industries	64,000	88,000	130,000	103

TABLE 3

COMPENSATION OF SUBORDINATES AS A PERCENTAGE OF CHIEF EXECUTIVE OFFICER'S COMPENSATION

Industry	Second	Third	Fourth
PAPER	82%	66%	59%
Chemicals	71	63	59
Foods	74	72	64
Rubber	75	56	46
Textiles	77	63	59
All industries	73	61	54

crease in compensation—the approximate average for all five of the nondurables groups, and slightly better than the all-industries average.

Top Subordinates Compensation

Survey results reveal the degree to which the compensation of second, third, and fourth ranking executives conforms to that of the chief executive. The percentage of the top manager's earnings received by the three top subordinates in the paper industry is significantly higher than the average for the all-industries group, as expressed in Table 3. In fact, the average of the second-in-command in paper was the highest of all 25 industries surveyed. The compensation rate of third- and fourth-level executives drops abruptly but still remains above all-industries average.

Deferred Compensation

This year's survey reveals some interesting facts about industry deferred compensation plans. For example, 80 per cent of the paper companies surveyed have pension plans for top executives. This average compares unfavorably with the all-industries average of 87 per cent, and with the range between 87 per cent and 91 per cent for the other nondurables industries mentioned above.

Thirty-five per cent of the paper companies have deferred compensation plans for top executives. This figure compares favorably with the all-industries average of 24 per cent and with the nondurables range of 21 per cent to 33 per cent. Thus, while the paper industry represents a lower-than-average participation in pension plans, this deficiency is counter-balanced by the above-average percentage of deferred compensation plans.

Editors Notes—

This study was based on a cross section of 20 companies selected both with regard to size and products, with a possible heavy emphasis on the larger companies.

The author defines the "chief-executive officer" as the highest paid individual in the company. Ten of the chief-executive officers are presidents, seven chairman, one honorary chairman, one executive vice president, and one is unidentified as to title.

The range in total chief-executive officer compensation in 1960 for the companies surveyed was $44,000 to $175,000. This information is of marginal value because the vital element in executive compensation is company size.

Pulpwood Price Trends in the Southeast

A survey of pulpwood prices in Florida, Georgia, North and South Carolina, and Virginia during 1960, found rough pine pulpwood averaging $16.45 per cord, a $0.45 increase over 1959 reports V. L. Robinson, forest economist with the U.S.F.S. Southeastern Forest Experiment Station.

Hardwood prices, on the other hand, he said, fell $0.10 a cord from $13.70 in 1959 to $13.60 in 1960. For the most part, this drop reflects larger purchases of rail and yard wood and less of the higher priced truck wood, even though truck wood prices did decline slightly.

These prices and the others shown in the accompanying table are based on reports covering 67 per cent of all rough pulpwood currently purchased in the 5-state area. The term "rough pulpwood" refers to wood with bark from standing trees, as contrasted with peeled wood, sawmill chips, veneer cores, or other wood residues used for pulp. Four price series are shown—one for wood loaded on railroad cars at sidings, one for wood delivered to mechanized pulpwood yards, one for wood trucked to pulpmills, and one for all-wood. The all-wood prices are weighted averages of all rough pulpwood purchases. Since they reflect changes in the proportions and prices of rail, yard, and truck wood purchased, they are applicable to total regional volumes of production or consumption.

Sawmill chips currently make up 11 per cent of the total wood fibre used for pulp. The most commonly reported prices for pine chips were $6.10 per ton in 1957 and 1958, $6.25 in 1959, and $6.50 in 1960. Hardwood chips in 1960 were priced at $1.00 to $2.20 a ton below pine chip prices.

AVERAGE PRICE OF ROUGH PULPWOOD IN THE SOUTHEAST, BY YEAR [1]
(In dollars)

	Pine				Hardwood			
Year	Rail wood [2]	Yard wood [3]	Truck wood [4]	All-wood [5]	Rail wood [2]	Yard wood [3]	Truck wood [4]	All-wood [5]
1938	3.55	—	3.85	3.60	—	—	—	—
1939	3.75	—	4.40	3.90	—	—	—	—
1940	4.00	—	4.60	4.15	—	—	—	—
1941	4.50	—	5.00	4.60	—	—	—	—
1942	5.90	—	6.65	6.00	—	—	—	—
1943	7.15	—	8.00	7.25	—	—	—	—
1944	8.15	—	8.70	8.20	—	—	—	—
1945	8.35	—	9.15	8.45	8.10	—	8.55	8.10
1946	9.90	—	10.75	10.10	9.50	—	10.55	9.70
1947	10.80	—	11.70	10.95	9.70	—	10.55	9.80
1948	11.65	—	12.30	11.70	11.00	—	11.25	11.05
1949	10.85	—	11.80	11.00	10.75	—	11.25	10.80
1950	11.85	—	12.55	11.90	10.70	—	11.50	11.00
1951	13.65	—	14.70	13.85	12.40	—	13.15	12.75
1952	13.70	—	14.70	13.90	12.40	—	13.15	12.80
1953	13.70	—	14.70	13.90	12.35	—	13.15	12.75
1954	13.75	—	14.75	13.95	12.30	—	13.15	12.75
1955	14.15	—	15.05	14.35	12.50	—	13.45	13.05
1956	15.15	—	16.45	15.45	12.90	—	13.90	13.50
1957	15.20	15.40	16.35	15.50	12.65	12.70	13.75	13.35
1958	15.20	15.40	16.10	15.50	12.45	12.50	13.85	13.45
1959	15.60	15.90	16.60	16.00	12.90	12.80	14.25	13.70
1960	16.25	16.35	17.20	16.45	13.15	13.25	14.05	13.60

[1] Per cord of 128 cubic feet of 5-foot wood with bark. Includes dealers' allowances in cases where they are paid. Prices are rounded to the nearest 5 cents.
[2] F.o.b. railroad car.
[3] Delivered to mechanized pulpwood yard.
[4] Delivered to pulpmill.
[5] Weighted average of all wood loaded on railroad cars, trucked to pulpwood yards, and delivered to pulpmills.

No. 480—48″ discs, 3,000 HP.
World's largest field proven pulp refiner.

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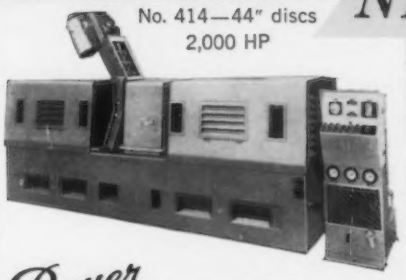

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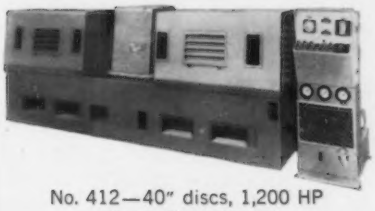

No. 412—40″ discs, 1,200 HP
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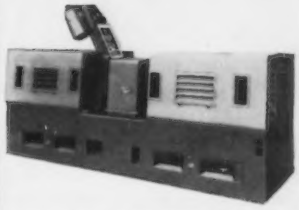

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Double Revolving Disc Refiners...*In the size you want!*

With four brand new models of the field proven 480 type now added to the lineup, Bauer offers the most complete selection of double revolving disc refiners to help solve your particular pulp preparation problem. Machines are available with power ratings from 200 HP to 3,000 HP, with disc sizes from 24″ to 48″. The unique double revolving disc action of these refiners preserves, rather than shortens, fiber length, thus developing fiber strength and pliability. These refiners are widely used for groundwood, kraft and sulphite screenings; semi-chemical pulp; Bauerite pulps; sulphite pulp and paper refining (for tissues, etc.); straw, bagasse; high yield sulphite; waste paper and de-ink; and bleaching.

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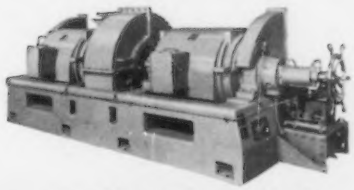

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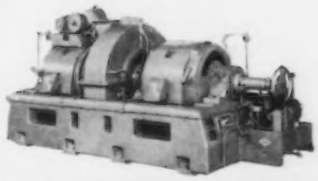

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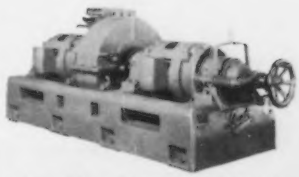

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Need completely slaked, homogeneous mixtures? Do shut-downs for grit and clinker removal hold up production? Do hot, dust-laden vapors foul up your feeder? Do you have excessive bearing trouble . . . causing leaks and costly maintenance? B-I-F Pug Mill Slakers save lime, time and trouble...add profits to your process!

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Prices of Fibers

MARKET WOOD PULP

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Delivered Basis

	U.S.	Canadian	Swedish	Finnish	Norwegian
Groundwood	$82.50/ 90.00	$82.50/ 90.00	$90.00/ —	$90.00/ —	$90.00/ —
Bleached Gw'd.	97.50/100.00	97.50/100.00			
Kraft, Blchd.	‡140.00/150.00	‡140.00/150.00	150.00/ —	150.00/ —	150.00/ —
Kraft, Blchd. Hdwd.	135.00/140.00		140.00/ —		
Kraft, Semi-bleached.	130.00/140.00				
Kraft, Unbl.	117.50/125.00	125.00/ —	125.00/130.00	125.00/ —	
Sulphite, Blchd.	‡135.00/140.00	‡135.00/140.00	140.00/ —	140.00/ —	140.00/ —
Sulphite, Bl. Hdwd.	135.00/ —				
Sulphite, Unblchd.	125.00/ —	125.00/ —	125.00/ —	125.00/ —	125.00/ —
Sulphite, Unb'l. Gl'sn.		140.00/ —	134.00/ —		
Soda, Blchd.	130.00/135.00	130.00/135.00			

‡ Depending on Brightness.

COTTON LINTERS

F.O.B. OIL MILLS PER CWT
WEEK ENDED DECEMBER 5

	Atlanta	Memphis	Dallas	Los Angeles
Grade 1	n.a.	n.a.	n.a.	n.a.
2	n.a.	n.a.	$9.00/8.50	$8.25/8.00
3	$8.00/7.75	$8.25/7.50	8.00/7.25	7.50/7.25
4	7.75/7.25	7.25/7.00	7.00/6.75	7.00/6.50
5	7.25/6.75	6.75/6.50	6.75/6.50	6.00/5.75
6	6.75/6.25	6.00/ —	6.25/6.00	5.50/ —
7	6.25/5.75	6.00/ —	6.00/5.75	n.a.

WASTE PAPER MARKET

Mill Prices, f.o.b. Trucks Shipping Point — Includes Brokerage

These quotations are a partial indication of the price range on volume tonnage in each market on the date specified, as gathered from major dealers and brokers. SPECIAL PACKINGS AND SPOT TONNAGE NOT INCLUDED. Prices nominal.

	New York	Boston	Chicago	Los Angeles
	December 11	December 11	December	December
No. 1 Mixed Paper	$ 12.00/ 13.00	7.00/ 10.00	6.00/ —	12.00/ —
No. 1 News	16.00/ 18.00	— / 14.00	16.00/ —	15.00/ —
Overissue News (Lg. size)	21.00/ 24.00	12.00/ 14.00	21.00/ —	18.00/ —
Mill Wrappers	19.00/ 22.00	10.00/ 12.00	11.00/ —	13.00/ —
Old Corrugated Containers	22.00/ 25.00	18.50/ 19.00	20.00/ —	16.00/ —
Super Resorted Kraft Paper	35.00/ 40.00	— / —	30.00/ —	50.00/ —
New Double Kr. Ld. Corr. Cuts	27.50/ 30.00	30.00/ 32.50	27.50/ —	27.50/ —
(Semi-chem. medium)	45.00/ —	40.00/ 45.00	42.50/ —	— / —
New 100% Kraft Corr. Cuts	42.50/ 47.50	— / —	50.00/ —	— / —
New Br. Kraft, Env. Cuts	65.00/ 70.00	65.00/ 75.00	45.00/ —	37.50/ 40.00
New Br. Kr. Bag Waste Prntd.	50.00/ 55.00	50.00/ 60.00	45.00/ —	35.00/ —
New Br. Kr. Bag Waste Unprintd.	55.00/ 60.00	60.00/ 65.00	55.00/ —	45.00/ 47.50
No. 1 Groundwood Shvs.	20.00/ 25.00	20.00/ 25.00	15.00/ —	25.00/ —
White Newsblanks	50.00/ 55.00	40.00/ 45.00	30.00/ —	55.00/ —
No. 1 Soft White Shvs.	60.00/ 65.00	55.00/ 65.00	50.00/ —	75.00/ —
Super Soft White Shvs.	65.00/ 75.00	70.00/ 80.00	60.00/ —	— / —
Hd. White Shvs.	85.00/ 90.00	80.00/ 90.00	75.00/ —	80.00/ —
Hd. White Env. Cuts	95.00/100.00	100.00/105.00	80.00/ —	103.00/ —
Col. Tab. Cards	42.50/ 45.00	42.50/ 45.00	47.50/ —	35.00/ —
Manila Tab. Cards	62.50/ 65.00	62.50/ 65.00	70.00/ —	75.00/ —
No. 1 Col. Ledger	35.00/ 40.00	32.50/ 37.50	40.00/ —	23.00/ —
White Ledger	55.00/ 57.50	50.00/ 55.00	50.00/ —	40.00/ 45.00
Mixed Book & Mag.†	14.00/ 15.00	— / —	8.00/ —	/ —
No. 1 Books‡	15.00/ 20.00	18.00/ 22.00	22.50/ —	8.00/ 13.00

† Includes Time & Life; no coarse groundwood. ‡ Not to exceed 10% of groundwood.

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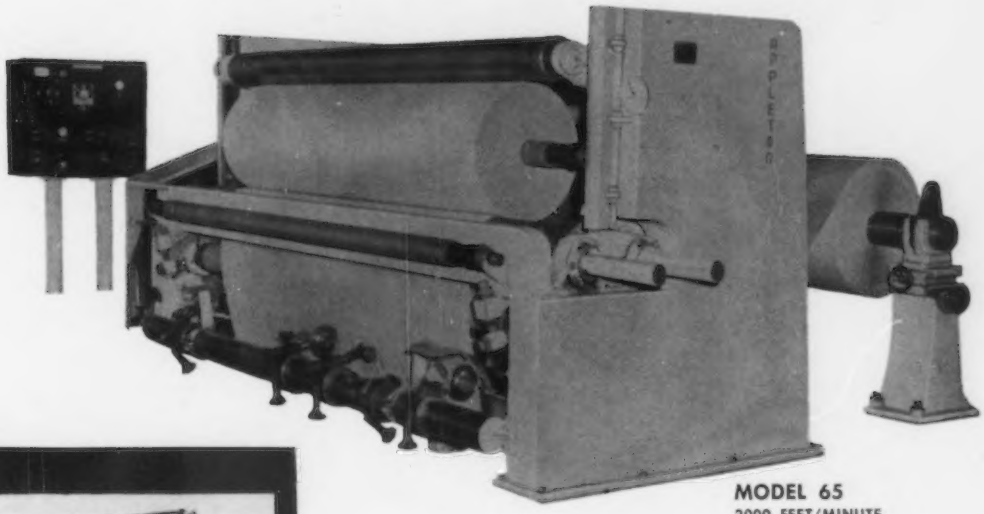
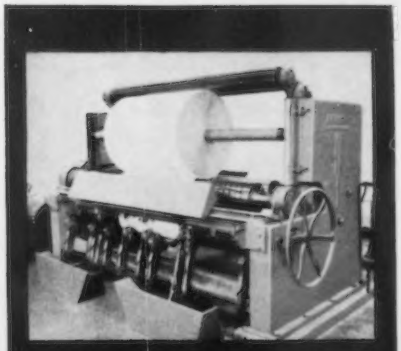
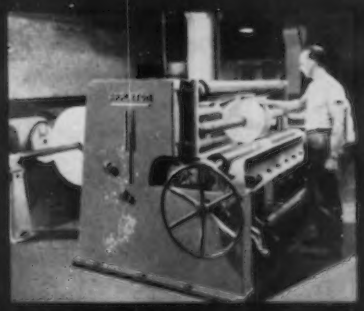


MODEL 65
2000 FEET/MINUTE
10½" DIAMETER DRUM





APPLETON 60, 65 REWINDERS

About the best testimonial for any product is a satisfied user — perhaps the main reason for Appleton's growing stature in the rewinding industry. Low silhouette design, fully pneumatic and vibration-free operation, heavy box type construction, simple drives, minimum maintenance — ALL contribute to the success of Appleton Rewinders. Prominent among our existing Model 60, 65 rewinder customers are Ashuelot Paper Co., Fletcher Paper Co., Nekoosa Edwards Paper Co., Potlatch-Forests, Inc., and Wausau Paper Co. So let's discuss your score cut or shear cut rewinder needs. We think you may want to join this family of satisfied users too!

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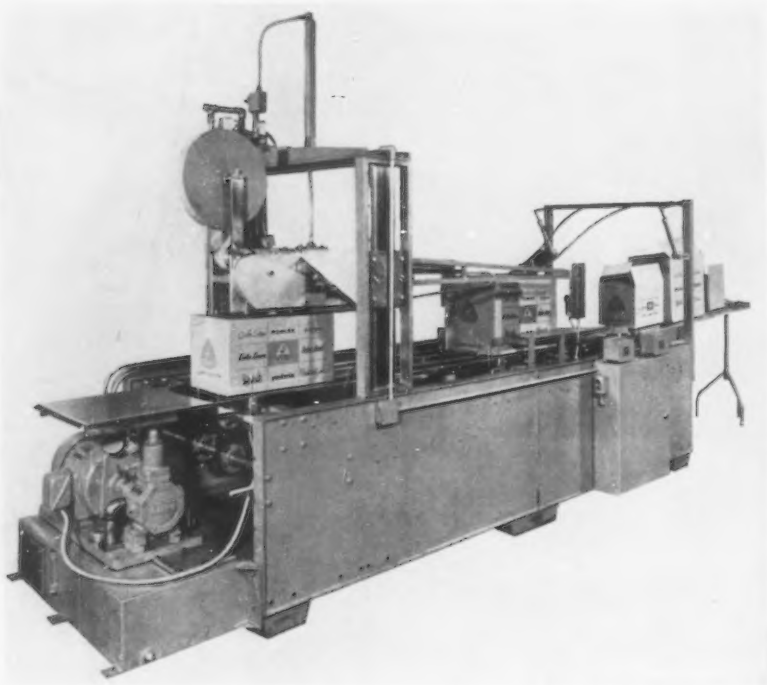


Automatically Tapes Cartons of Intermixed Sizes

The "Rand-M-Seal" is a fully automatic carton tape sealing machine, for top or top and bottom tape application, self adjusting for length, width and height to cartons of randomly intermixed sizes within the range of 8 x 8 x 6 inches to 30 x 30 x 30 inches.

Cartons are tape-sealed regardless of their condition or size, new or old. The tape dispensing and application unit is believed to be "new" with special controllable feeding, moistening, and application devices. Pressure to apply tape to carton is equalized during the process or tape sealing. The tape cut-off mechanism is self sharpening and self cleaning if asphaltic tapes are used.

The "Rand-M-Seal" Automatic Random Taping Machine consists of the following stations: Indexer; Flap-closer; Index Belt Conveyor; Carton Centering Device; Electronic Height Sensing Device; Hydraulic-Electric Elevator; Main Conveyor; Tape Applicator. The machine is operated by means of mechanical devices in conjunction with the electronic and hydraulic circuits. The construction of the machine is of sufficient strength to withstand a continuous operation. Maintenance requirements are kept to a minimum, the company said. Overall space required for the machine, including control panel is 14 x 4½ x 8 feet high.

This machine is especially recommended for operations where manual tape sealing or any other sealing methods are costly and beyond control due to a great variety of carton sizes and is a natural for centralization of shipping points.

"Rand-M-Seal" is available for top and top and bottom tape application of standard water soluble gummed and reinforced tapes applicable in jumbo rolls. For further information, contact: Milwaukee Tool and Machine Co., Inc., Milwaukee 4, Wis.

AUTOMATIC FLUTER, developed by Container Corp. of America, is designed to eliminate the operator variable in test sample preparation. The automatic fluter produces 6 x ½ inch test strips at a rate adequate to keep two flat crush testers in operation simultaneously. Testing Machines Inc., 72 Jericho Turnpike, Mineola, N. Y.

Said To Control Slime More Effectively

More effective control of slime deposits in pulp, paper and board mills can be accomplished through use of a microbiocide called Nalcon 248, says Nalco Chemical Co.. It is said to be an effective preservative for coating slurries, glue solutions and fermentable chemical systems. Standard mill equipment may be used to apply the product. For detailed information write Nalco Chemical Co., 6300 West 66th Place, Chicago 38, Ill.

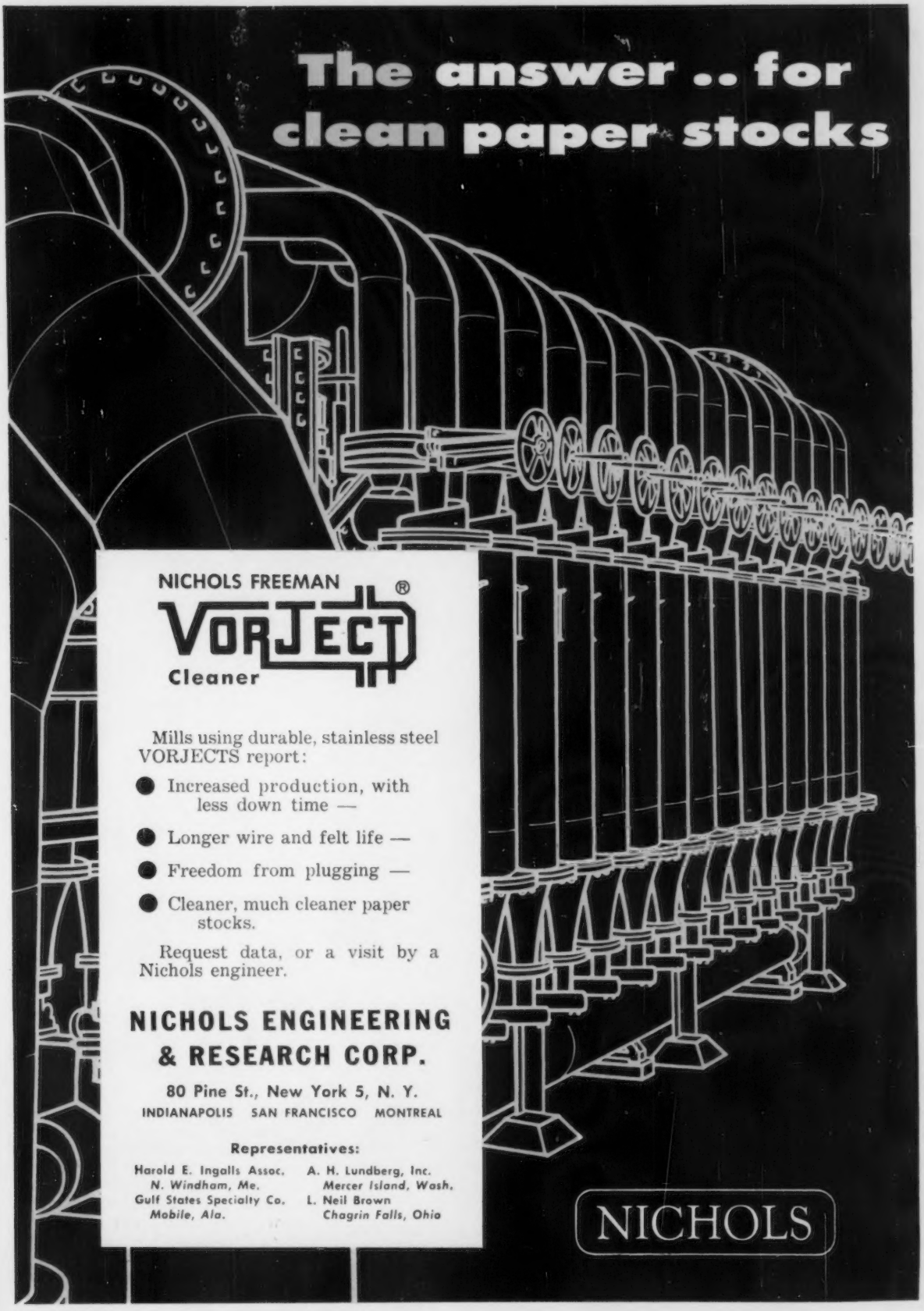
Decreases Aging, Increases Thermal Stability of Paper

Licensing arrangements for using Insuldur insulation for application to cellulose products to increase their resistance to oxidation, heat, and aging have been announced by the Westinghouse Electric Corp. This low-cost material is also said to improve the tensile and bursting strength of paper and other cellulosic materials.

Insuldur insulation is a cellulosic product thermally stabilized by increased oxidation resistance due to the introduction of certain chemical additives to the material. For paper making, Insuldur insulation additives are introduced in the range of 2.5-5.0 per cent after the sheet has been formed and partially dried.

High-temperature testing has indicated that the stabilized cellulose can operate at a temperature approximately 30°C higher than regular cellulose and still maintain the same life expectancy. This means that up to 200°C its life would be eight times that of ordinary untreated cellulose. Westinghouse says the cost of the finished product is not materially increased by the process of stabilization although there will be some variation depending on the

The answer .. for clean paper stocks



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- Freedom from plugging —
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NICHOLS

Meet Huyck's

TOM ALEXANDER

Tom Alexander, a graduate of Philadelphia Textile Institute, is Huyck's Chief Felt Designer. Since joining Huyck in 1951, he has devoted the lion's share of his time and effort to the construction and design of papermakers' felts.

Naturally, Tom and all of the felt designers he supervises know and understand paper machine requirements. When machine components, speeds or grades are to be changed, this design team has the experience and ability to convert such revisions into successful felt designs modifications. Tom and his group also draw heavily upon Huyck's new developments in chemical treatments, synthetic blends, new weaves and yarn constructions to assure you the best in felt performance.

HUYCK FELTS

First in felts since 1870

method of addition, speed of application, etc.

Insuldur insulation principle can be used with a wide range of products such as: cable wrapping, legal documents, paper clothing, valuable manuscripts. To date, production has centered around the stabilization of such papers as rag paper, rope paper, and kraft paper with a limited amount of study in other products such as hard fiber, fish paper, glassine paper, rayon, etc. Out of the many compounds studied, a limited number have been found which alone and in combination definitely improve the thermal stability.

For further information, write Westinghouse Electric Corp., P. O. Box 2099, Pittsburgh 30, Pa.

Predicts Behavior of Board in Creasing Press

The PATRA Carton Board Creaser tells the converter which of alternative paper boards will be most satisfactory—how to set the creasing press correctly for the type board being used. It saves time and money by reducing trial and error in makeready, says the manufacturer.

Provision is also made for changing the thickness of the creasing rules and for altering the distance

between them to simulate different sizes of cartons. This reproduces the effect of a change in panel size and is particularly important for small cartons. Here, a particular board may be satisfactory for a large size but show cracking when the distance between the creases is reduced. For more details, write Testing Machines Inc., 72 Jericho Turnpike, Mineola, N. Y.

Endless Conveyor Belting Designe For Small Pulleys, High Speeds

Truly endless conveyor belting, designed for service where high speed operation over small pulleys will tear up normal belt splices, is being "tailor-made" by The Goodyear Tire & Rubber Co. Akron 16, Ohio. The belting is built to a specified length by a continuous method to eliminate any splice that might fail, according to a Goodyear spokesman.

The belting is made on a special

Tidland RELIABLE REELS

Pneumatic or Hydraulic
Semi- or Fully-Automatic
Fully Adjustable Nip Pressure
Replaceable Ways
Box Steel Frame with Enclosed Quadrant Gears
Oscillating Doctor

Accessories include
Reel Spool Starter,
Backtender Ropes,
Spreader Rolls (any type)

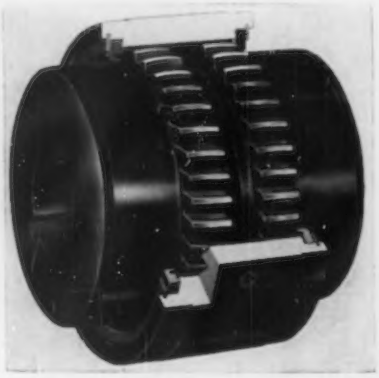
CUSTOM MADE ... ANY SIZE
Center Wind Attachment Available

Write for complete details

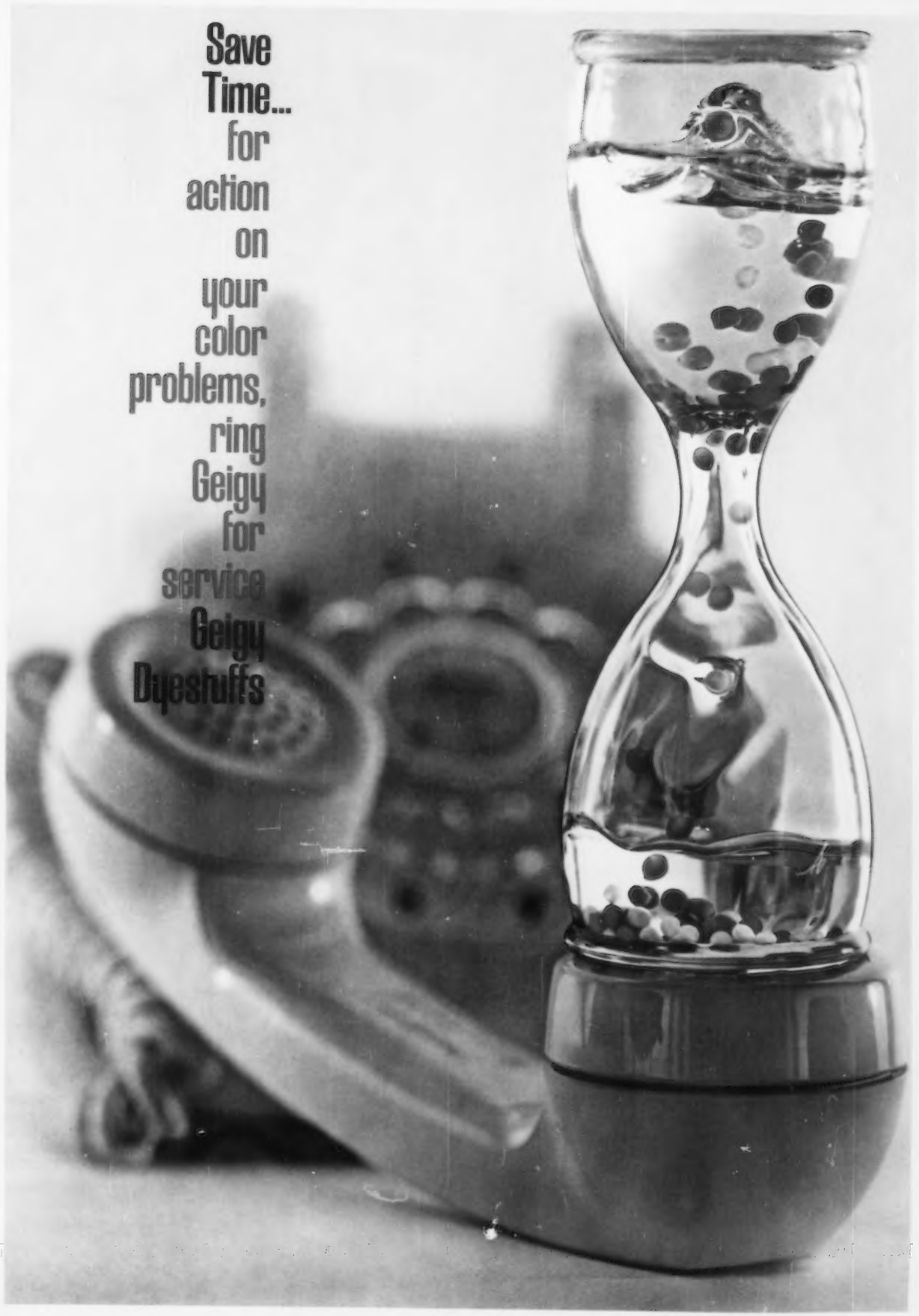
Tidland MACHINE COMPANY

2363 S. E. 8th AVENUE
CAMAS, WASHINGTON

DESIGNERS AND BUILDERS OF SPECIALIZED EQUIPMENT FOR PAPER MILLS AND CONVERTERS



SINGLE SLEEVE COUPLING, called "Powerlign", has curve tooth design that will allow for a misalignment of up to 2° and a pressure angle providing high torque capacity. Four sizes, 1⅛, 1⅝, 2⅛, and 2⅝ inches with hubs finish bored and keyed from ½ to 2⅝ inches in ⅛ inch increments are available. Waldron-Hartig Div., Midland-Ross Corp., P.O. Box 791, New Brunswick, N. J.


Save
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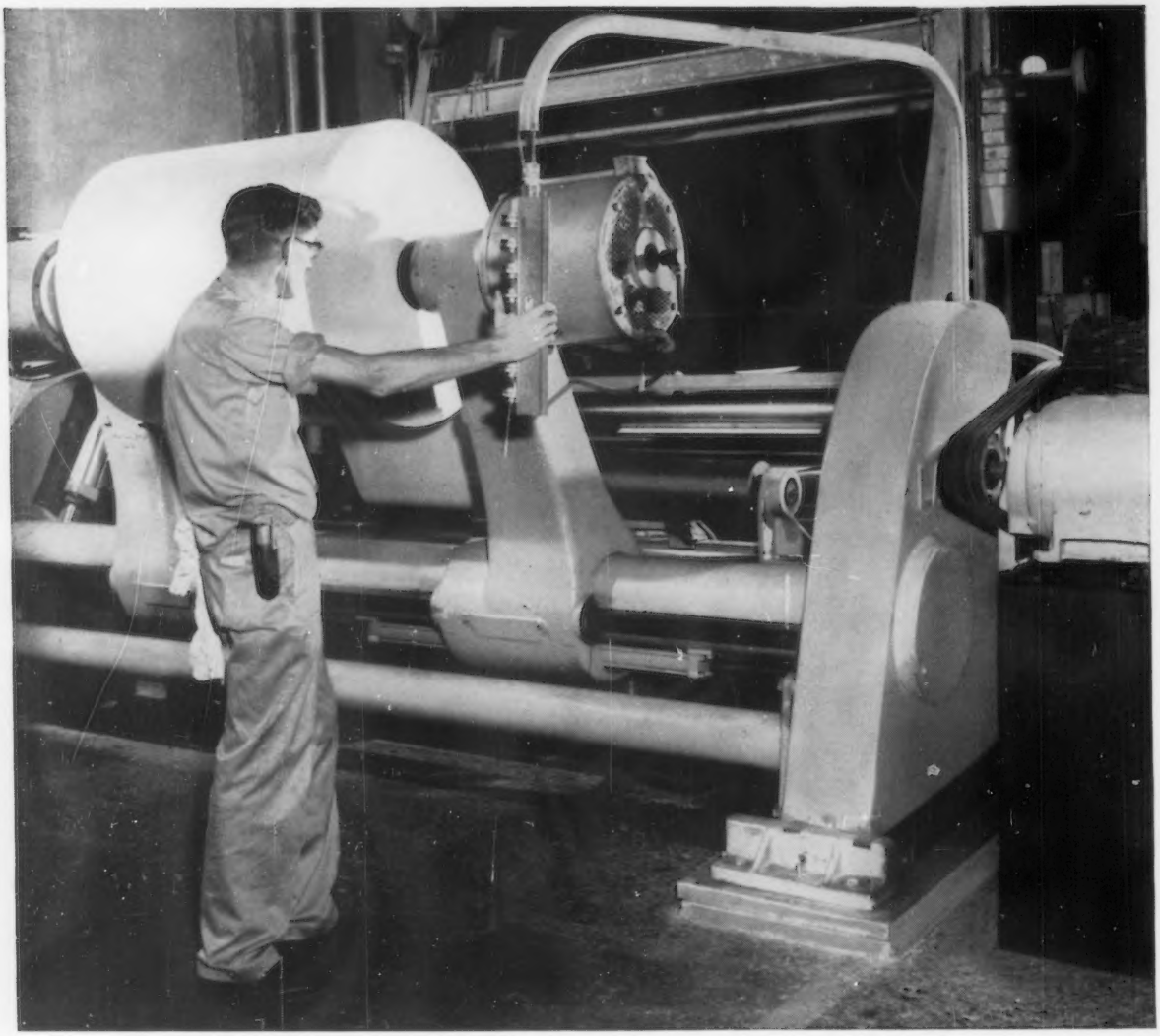


They threw out the unwind shaft and roll production jumped 50%

This is the magic of the Langston shaftless unwind stand. Put it in anywhere and right away you can get more production—and with actually less manpower.

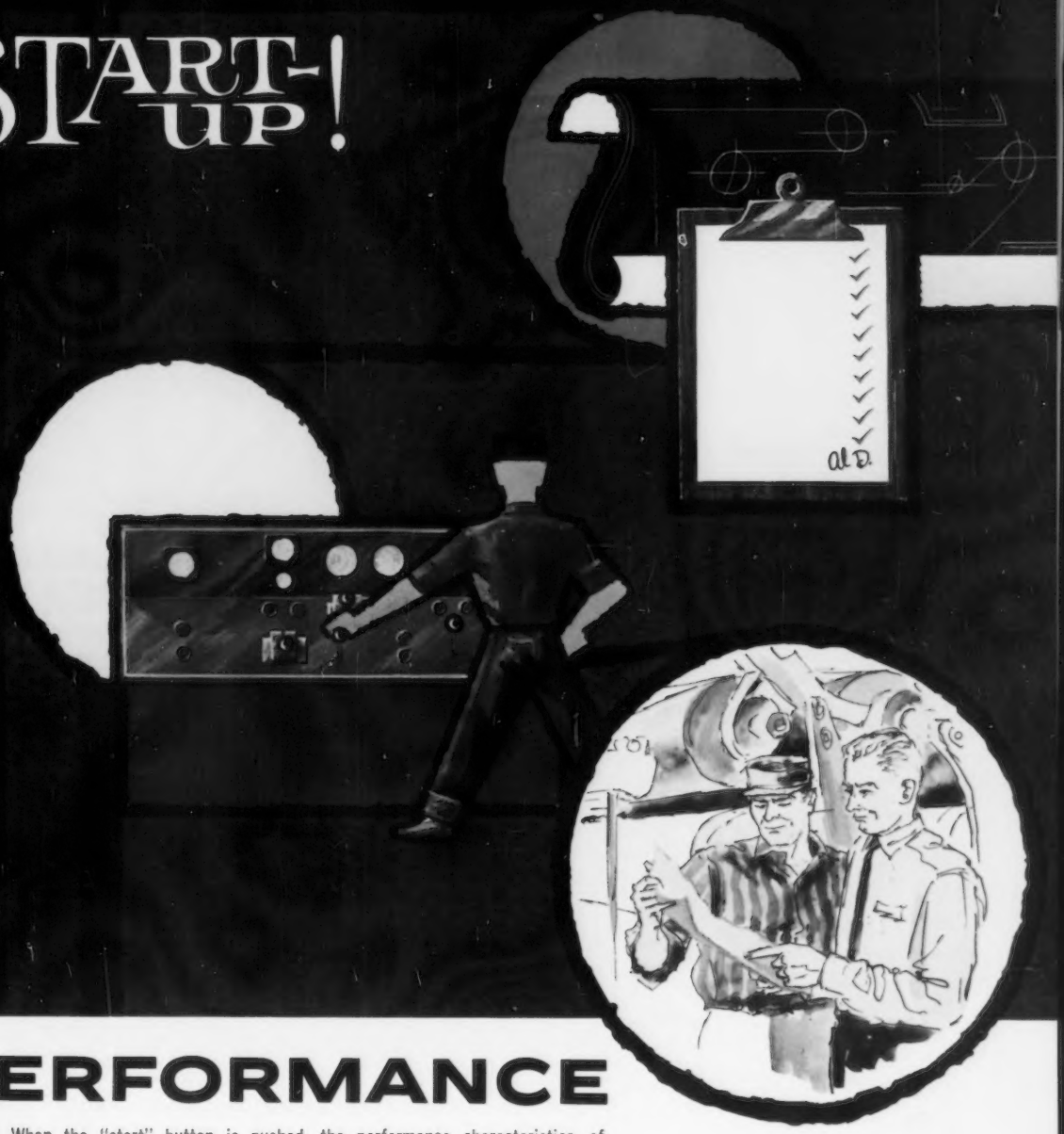
Usually one operator can do everything—faster than two men with a shaft-type back stand. At Potlatch Forests, Inc., Lewiston, Idaho, for example, the operator can get a roll on the machine ready to unwind in about 60 seconds. All he does is maneuver the roll into position, push a button that closes the arms, another button to lift the roll into running position . . . and the job is done. No horsing a heavy shaft. No uncertain manual tightening of cones. No risk of slippage. Powerful hydraulic cylinders close the cones tight on the roll and hold them there automatically. He doesn't have to return rolls to the "broke beater" merely because of damaged cores or slow down the machine when unwinding out-of-round or narrow rolls.

Langston shaftless unwind stands can pick up rolls in diameters as small as 14 in. and as large as 84 in.—as narrow as 10 in. and as wide as 132 in. or more. Side register control, an optional extra, lets you unwind slipped (telescoped) rolls with a minimum of trim.

Economy is the big reason for today's trend toward these Langston shaftless unwind stands. Does economy interest you? Write for complete details. Samuel M. Langston Co., 6th & Jefferson Sts., Camden 4, N.J.

Langston *LEADERSHIP . . . BY DESIGN*

START-UP!



PERFORMANCE

When the "start" button is pushed, the performance characteristics of a felt are soon apparent.

Albany Felts are designed and manufactured to give their best from the very second of start-up, when strain is the most intense. This is the moment of stress — on the paper machine, on the men responsible for paper production, and on the felt.

In recent months three major mills started with Albany Felts on all positions. Albany Felt Company took special pride for its part in these successful installations and start-ups.

They were the result of a dedicated partnership relation with papermakers by Albany Felt Company Sales and Service Engineers. The continuing objective of these specialists is to make certain your felt performs and helps you produce **more saleable tons per day!**

From order to installation, and from start-up to peak production, this Albany Felt team is vitally interested in serving you.

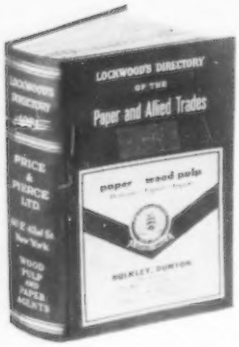
TALK START-UP WITH YOUR ALBANY FELT SALES ENGINEER

ALBANY FELT COMPANY

ALBANY, N.Y.

N. Monmouth, Maine Hoosick Falls, N. Y. St. Stephen, S. C. Cowansville, Quebec Cuautitlan, Mexico

Now is the time to order your copy of the



1962
LOCKWOOD'S DIRECTORY
OF THE PAPER AND ALLIED TRADES

The new edition, just off the press, incorporates thousands of changes to make this the most up-to-date, authoritative reference book ever published for the industry.

What's in it for You

Paper and Pulp Mills

United States
Canada
Cuba
Mexico
Latin America
Philippine Islands
City Addresses of Paper and Pulp Mill Offices
Concerns with Two or More Mills in the United States
Concerns with Two or More Mills in Canada
Products of United States Paper Mills Classified
Products of Canadian Paper Mills Classified
Products of United States Pulp Mills Classified
Products of Canadian Pulp Mills Classified
Idle Mills
Mills Listed for First Time
Mill Officials
Statistical Table
Index to Mills

Converters of Paper and Paperboard

United States
Canada
Products of United States Plants Classified
Products of Canadian Plants Classified
Index to Converters

Merchants

United States
Canada
United States Exporters
United States Importers
Canadian Exporters and Importers
Wood Pulp Agents, Importers and Exporters

Equipment, Supplies and Technical Services

Suppliers
Addresses
Leading Trade Names

Miscellaneous

Pulp Testers
Rags and Paper Stock Dealers
Rags and Paper Stock Consumed
Watermarks and Brands
Addresses of Owners of Watermarks and Brands
Trade Associations

The 1962 Directory contains 1572 pages of organized information on all phases of the industry in the United States and Canada, with lists of paper and pulp mills in Latin America and the Philippine Islands.

Use Lockwood's for finding answers on who makes what, in the industry and for the industry. Use it for names and titles of pulp and paper mill executives. Use it for sales leads, for research, for marketing, for buying information.

Separate sections on mills, suppliers and converters make this the easiest as well as the most complete source of industry information.

Now is the time to check how many copies you need for your office, branches, mills, and to order them so you can put them to work right away. Order as many as you can use, because the value of LOCKWOOD'S DIRECTORY is in direct proportion to the use you make of it.

Lockwood's Directory of the Paper and Allied Trades
49 West 45th Street, New York 36, N.Y.

Send me ..... copies of the 1962 edition of Lockwood's Directory of the Paper and Allied Trades. Ship postpaid to my attention at the following address:

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City ..... Zone ..... State .....

( ) our check enclosed, @ $15 per copy.

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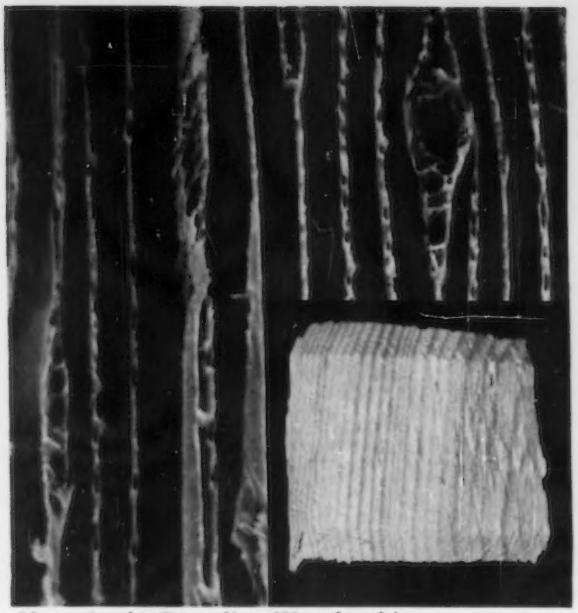
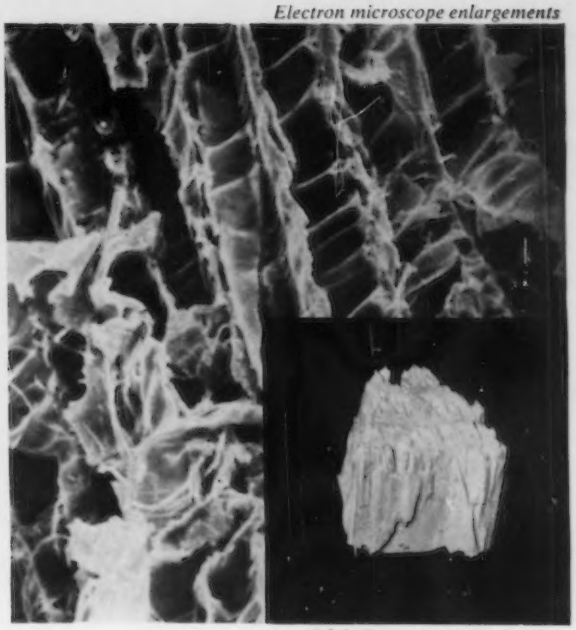
Electron microscope enlargements



New Anglo-Canadian Wonderchip



Old Conventional Chip

NEW DRUM CHIPPING METHOD MAKES WONDERCHIP®

A GREAT NEW UNBLEACHED SULPHITE PULP

Check these advantages of WONDERCHIP's continuous drum chipping process:

- ☐ Yields a sulphite pulp of exceptional strength and quality
- ☐ Reduces fiber damage and pulp degradation
- ☐ Chips parallel to the grain
- ☐ Brings out the best in the wood
- ☐ Little or no deformation of fiber
- ☐ Very uniform cross-section
- ☐ Screening of chips eliminated
- ☐ Knots sliced away; disappear during the cook
- ☐ All chips have same length, same thickness (⅛″) within reasonable variation
- ☐ More uniform cooking due to uniformity of chips
- ☐ Drum chipping permits raising of permanganate number without significant increase in rejects
- ☐ Pulp approaches kraft in strength

Write on letterhead for detailed report on WONDERCHIP's new method of wood chipping.

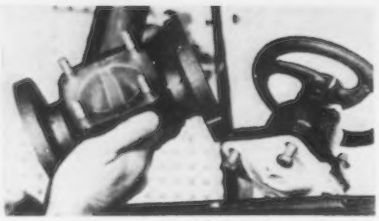
Anglo-Canadian Pulp and Paper Mills, Ltd.
QUEBEC, P. Q., CANADA

Sold by: Anglo Paper Products, Ltd.
615 Dorchester Blvd. West, Montreal 2, Quebec

Sales Representative in the United States:
Montmorency Paper Company, Inc.
230 Park Avenue, New York 17, N. Y. • 20 N. Wacker Drive, Chicago 6, Ill.

machine on which adjustable pulleys are set apart at the proper distance to duplicate the drive for which the belt is being produced. The belts find use on special conveyors that have demountable side frames for endless belt installation.

It was pointed out that the endless belting is not made for normal belt installations where centers are a considerable distance apart. These endless belts are for short center service where a splice or mechanical fastener will fail rapidly because of flexing over small pulleys. They can be furnished in lengths to 104 feet where widths are between 12 and 30 inches. In 30- to 36-inch widths, length is limited to 65 feet. The carcasses are covered with a variety of rubber compounds, depending on the type of service.



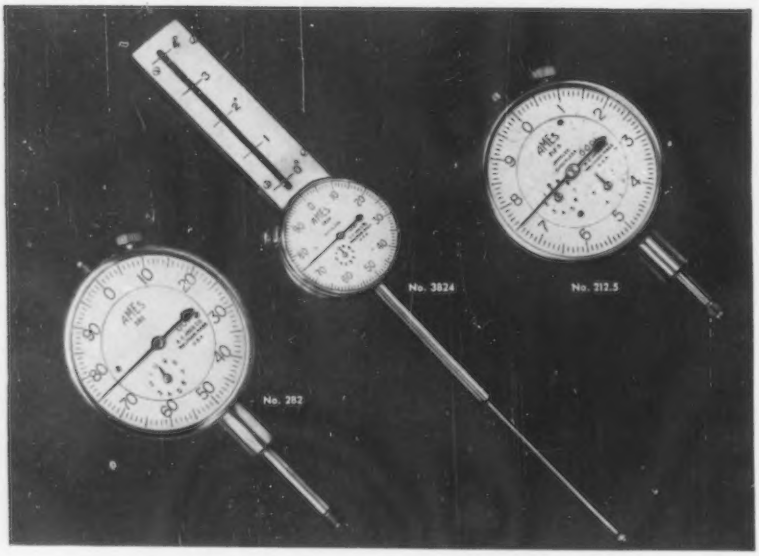
Plastic-Lined Valve Pipes Fluids Above 300° F.

Tube Turns Plastics, Inc., has developed a steel diaphragm-type valve with a molded lining made of a thermoplastic called "Halon" fluorohalocarbon, a material classified by its developer, Allied Chemical Co., as being serviceable at temperatures as high as 390 and as low as minus 320 degrees F.

TTP said that economics and demand will determine the next step up the ladder to commercial production of Halon-lined pipe, fittings, flanges and valves. The plastic will be used almost exclusively in lined piping for handling corrosive fluids with light-wall steel pipe providing the mechanical strength lost by the plastic at elevated temperatures.

Key properties of the fluorohalocarbon resin, according to the manufacturer's technical data, include chemical inertness, zero moisture absorption, thermal stability toughness, electrical non-conductivity, non-flammability and excellent weatherability. It is virtually unaffected by inorganic acids, alkalies or oxidizing agents and most organic compounds. Tube Turns Plastics, Inc., Louisville 1, Ky.

AMES *Masters of Measurement*



LONG-RANGE DIAL INDICATORS

Use Them for Checking: long slide travel, large cams, deep recesses or other dimensions requiring indicator spindle travel up to 12".

Features Include: large diameter dials, widely spaced dial graduations, movable dials, replaceable contacts and count hands.

Attachments: rubber dust guards, tolerance hands, lift levers, special backs, contact points, etc.

For literally hundreds of measuring, indicating and comparing operations, you'll find Ames standard and customized gauges and indicators unerringly accurate and amazingly durable . . . *You're asking for the best when you specify Ames!*

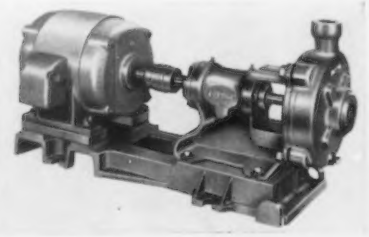
B. C. AMES CO., Waltham 54, Mass. Representatives in Principal Cities — In Canada, H. C. Burton, Co., 166 Rebecca Street, Hamilton.

B.C. AMES CO.

MANUFACTURERS OF MICROMETER DIAL INDICATORS, DIAL GAUGES, ACCU-FLOW AIR GAGES, PORTABLE TRANSISTORIZED COMPARATORS

End-Suction Pump Features Interchangeable Packing Inserts

Type GA End Suction Centrifugal Pumps announced by the Aurora Pump Division, The New York Air

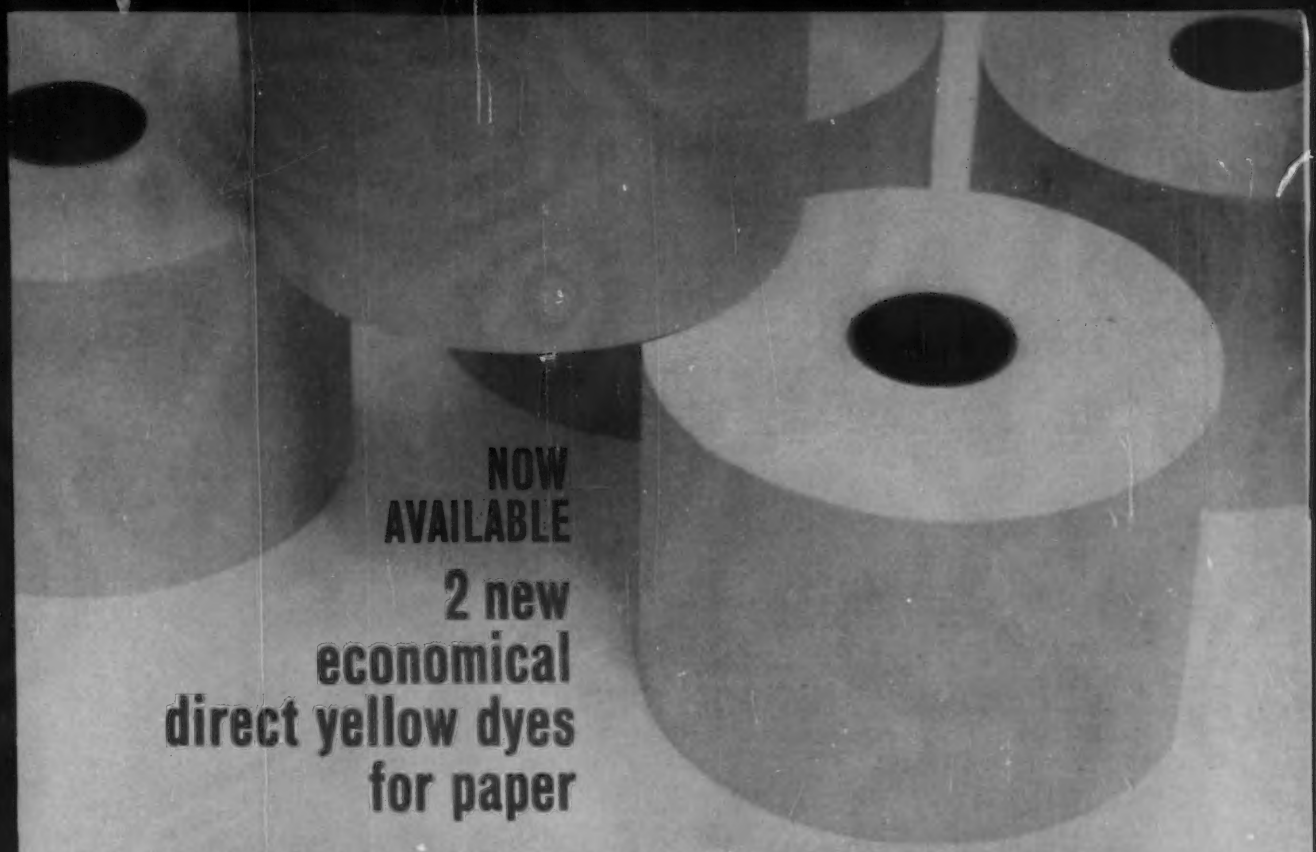


Brake Co., Aurora, Ill., are designed with completely interchangeable mechanical seal or packing inserts. Other features include: vertical centerline discharge, compactness, design simplicity, and constantly rising head capacity curves.

Vertical centerline discharge makes the pumps self-venting, eliminating the possibility of vapor locks and providing operation with a low noise level. Disassembly is possible without disturbing the suction or discharge piping. A stainless steel shaft with ¾ inch diameter through the seal or packing assembly is said to eliminate deflection while extending the seal or packing life.

Models are available in close-coupled or flexible-coupled designs with capacities to 450 g.p.m., heads to 210 feet, and temperatures to 220° F.

Keep your eye on our Classified Advertising Section



NOW AVAILABLE

2 new economical direct yellow dyes for paper

FASTUSOL® YELLOW RP
FASTUSOL® YELLOW RG

The dyes used in the coloring of paper add considerably to the cost of the finished sheet. GDC has now developed two new, low-cost, non-dusting direct yellows which offer all the benefits of a premium direct dye at minimum expense.

These new FASTUSOL YELLOWS produce extremely light-fast and bright greenish-yellow shades of the highest degree of even-sidedness. They are ideal for coloring all types of paper—bond, ledger, cover, text, etc.—both sized and unsized.

FASTUSOL YELLOW RP and RG are readily bleached with chlorine for simplified re-use of broke. They can be added dry to the beater without danger of showing color specks. They show no indication of burning-out or migration, hence being eminently suitable for coloring board dried at high temperature.

Try these dyes now in your furnish. The quality of our dyes is backed by the finest skilled technical service and prompt deliveries.

Write or call our nearest sales office for samples and additional information.

From Research to Reality

GENERAL DYESTUFF COMPANY

A SALES DIVISION OF

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CHARLOTTE · CHATTANOOGA · CHICAGO · LOS ANGELES · NEW YORK · PHILADELPHIA · PORTLAND, ORE. PROVIDENCE · SAN FRANCISCO · IN CANADA: CHEMICAL DEVELOPMENTS OF CANADA, LTD., MONTREAL.

FASTUSOL YELLOW RP AND RG MANUFACTURED BY GENERAL ANILINE & FILM ARE SOLD OUTSIDE THE UNITED STATES AND CANADA UNDER THE TRADENAMES, "FERMALIZ YELLOW RP AND RG," BY DISTRIBUTORS ALL OVER THE WORLD.

NEWS OF SUPPLIERS

A. L. Johnson

R. C. Swanson

John W. Bolton & Sons, Inc., and **The Emerson Manufacturing Co.** Division has appointed Allan L. Johnson West Coast district sales manager.

Before joining Bolton in 1956 as a western region sales representative, Mr. Johnson was with the Sun Oil Co. He holds an A.B. degree from Bowdoin College.

Robert C. Swanson has been named sales engineer for Bolton-Emerson. He will cover the northwest territory including Oregon, Washington and British Columbia, reporting to Mr. Johnson.

Mr. Swanson has had extensive industrial sales engineering experience in the Pacific Northwest including positions with Walworth Co., Hoover Ball & Bearing Co., Pacific Scientific Co. and General Bearing Co. A graduate of Oregon State Universtiy, he holds a B.S. degree in business and technology.

Bauer Bros. Co., Springfield, Ohio, announces the appointment of James W. Hulsizer as sales representative in Wisconsin, Minnesota, and the upper peninsula of Michigan. His headquarters will be in Appleton, Wis.

Mr. Hulsizer's experience in the pulp and paper industry includes sales and supervising the installation of complete systems, such as the Bauerite and Bauer-Bale systems.

Mr. Hulsizer has also been active in other major processing industries. He joined Bauer in 1954, after he was graduated from Wittenberg University.

J. W. Hulsizer

J. W. Jones

Lunkenheimer Co., Cincinnati, Ohio, manufacturer of valves, has appointed John W. Jones as sales representative.

Mr. Jones will cover all of Missouri and Arkansas, and southwest Illinois; and will be based in St. Louis. His appointment is keyed to the stepped-up Lunkenheimer sales program, designed to supply the increasing demands for performance-tested, maintenance-free valves

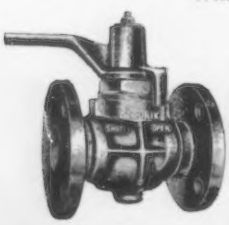
This Valve's COST Keeps Going DOWN!

The minute you start using a DeZURIK ECCENTRIC-ACTION VALVE you STOP leakage losses. DeZurik's positive leakproof performance can and will save the valve's cost in a few months.

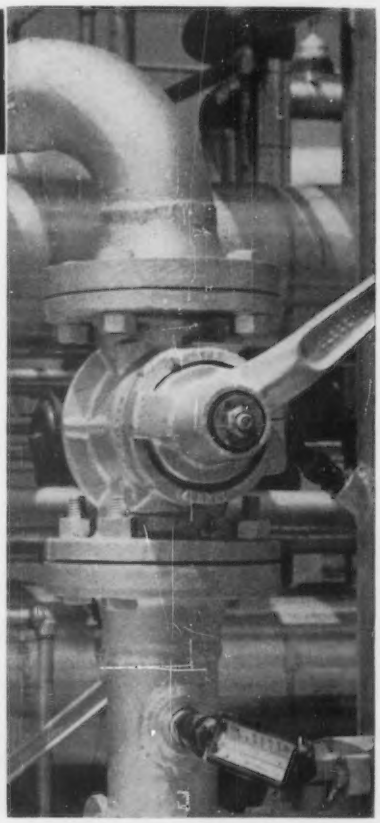
YOU SAVE MUCH MORE . . . the eccentric-action is friction-free. There's no rub, no scoring, virtually no maintenance, no adjustments. There's an absolute minimum of valve wear, a maximum of valve life. And there's no binding or freeze-up; eccentric-action opens and closes the valve with the easiest, smoothest quarter-turn, with accurate throttling, and without lubrication.

THE INITIAL COST of DeZurik Valves is low. Your own tests will show you that the cost GOES DOWN every day through savings on leakage, on maintenance, on extended life.

WRITE FOR BULLETIN 110.



DeZURIK Corporation
Sartell, Minnesota
DeZURIK OF CANADA, LTD. Galt, Ontario



Here is a Horse Head titanium dioxide tailor-made to meet your most exacting requirements in coating colors.

Horse Head A-440 is a soft-textured anatase titanium dioxide specially processed to remove all objectionable agglomerates. Virtually all of the pigment can be passed through a 325-mesh screen, wet, thus providing coatings of highest smoothness.

Horse Head A-440's low viscosity permits the production of coating colors of high solids content with excellent flow and leveling properties. Its ease of dispersion reduces mixing time.

You'll make better coating colors and save money with Horse Head A-440.

THE NEW JERSEY ZINC COMPANY, 160 Front St., New York 38, N. Y.

Founded 1848

Also distributed by BULKLEY DUNTON PULP CO. INC. • New York, N. Y. • Kalamazoo, Mich. • San Francisco, Calif.

throughout industry.

Mr. Jones graduated from Washington University, St. Louis, with a B.S. in business administration.

Bolton-Emerson S.A., Lausanne, Switzerland, subsidiary of John W. Bolton & Sons, Inc., and Emerson Manufacturing Division of Lawrence, Mass. appointed George F. Robertson A.M.I.E. (Aust.) as its representative for Australia and New Guinea. Mr. Robertson was formerly in charge of new mill construction projects for Australian Paper Manufacturers, Ltd.

OBITUARIES

A. Millard Daniels, [illegible]dent of L. L. Brown Pape[illegible], Mass., since 1938 and [illegible]asso-ciated with the company [illegible]ce 1907, died very suddenly on December 6.

Henry Hill, 65, a retired superintendent of Kimberly-Clark Corp., died December 3 at his home in Memphis, Tenn.

Mr. Hill was born in Ireland and had lived in this country 39 years. He worked with Kimberly-Clark in Niagara Falls, N. Y., before coming to Memphis 15 years ago.

Harry Jackson White, Jr., engineer for the St. Joe Paper Co., Port St. Joe, Fla., died December 2 in St. Vincent's Hospital, Jacksonville, Fla. Death was attributed to a streptoccus infection which followed hip surgery.

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ESTIMATES AND SURVEYS

Figures of the Week

PAPER PRODUCTION RATIO REPORT—American Paper & Pulp Assn. Figures
(Production as per cent of normal capacity)

COMPARATIVE WEEKLY SUMMARIES

	Nov. 4	Nov. 11	Nov. 18	Nov. 25	Dec. 2
1961	95.4r	94.8	94.5r	90.5r	93.6
	Nov. 5	Nov. 12	Nov. 19	Nov. 26	Dec. 3
1960	91.8	96.9	91.3	86.7	93.4

r Revised.

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1960	**96.5**	**97.7**	**98.1**	**96.9**	**97.6**	**96.1**	**81.2**	**91.7**	**89.1**	**94.8**	**92.0**	**80.2**	**92.7**
1961	87.9	90.0	91.2	91.2	91.6	91.3	78.0	90.5	88.2	94.0‡	93.8‡		

‡ Preliminary.

COMPARATIVE YEARLY SUMMARIES

	1954	1955	1956	1957	1958	1959	1960	1961
Year to Date	92.0	96.5	98.5	91.1	87.3	92.9	93.8	89.7
Year Average	91.6	96.2	97.9	90.4	87.0	92.2	92.7	

All of the above data is based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available.

PAPERBOARD OPERATING RATIOS†—National Paperboard Assn. Figures

COMPARATIVE WEEKLY SUMMARIES

	Nov. 4	Nov. 11	Nov. 18	Nov. 25	Dec. 2
1961	97	96	97	93	90
	Nov. 5	Nov. 12	Nov. 19	Nov. 26	Dec. 3
1960	88	92	89	81	79

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1960	92	95	94	93	94	92	78	94	88	93	86	73	**89**
1961	89	89	92	91	92	94	78	95	92	98	94		

† *Per cent of operation based on "inch-hours" reported on a 6-day basis to the National Paperboard Association.*

SUMMARY OF PAPERBOARD STATISTICS—National Paperboard Assn. Figures

ITEM	WEEK ENDING Nov. 25, 1961	WEEK ENDING Dec. 2, 1961	CUMULATIVE TO DATE January 1, 1961 to December 2, 1961
% Activity	93%	90%	91%
Total	332,276	331,983	15,389,229
Containerboard—Domestic Use	185,271	180,658	7,936,138
Liner	128,177	121,647	5,305,349
Corrugating Material	52,974	55,401	2,402,075
Chip & Filler Board	4,120	3,610	228,714
Boxboard—Domestic Use	89,166	95,336	4,620,019
Folding	53,344	54,913	2,754,601
Set-Up	9,910	30,525	454,437
Special Food Board	25,912	55,989	1,410,981
Other Paperboard	57,839	24,854	2,833,072
Containerboard Type	23,686	31,135	1,357,789
Boxboard Type	34,153		1,475,283
Total Orders		346,452	
Received	292,355	484,863	
Unfilled End of Week	473,385		

Orders Received are at all time high both on actual and seasonally adjusted basis.
(H) New record high production.

The First Complete Book In Its Field . . .

PULP AND PAPER MILL INSTRUMENTATION

By filling in and mailing the handy coupon today, you will be among the very first to benefit by this practical hard-bound volume.

In 117 large 7" x 10" pages, with dozens of charts, diagrams and tables, PULP AND PAPER MILL INSTRUMENTATION brings you full details on instruments for your mill, their selection, their use, and their maintenance.

Contents Include:

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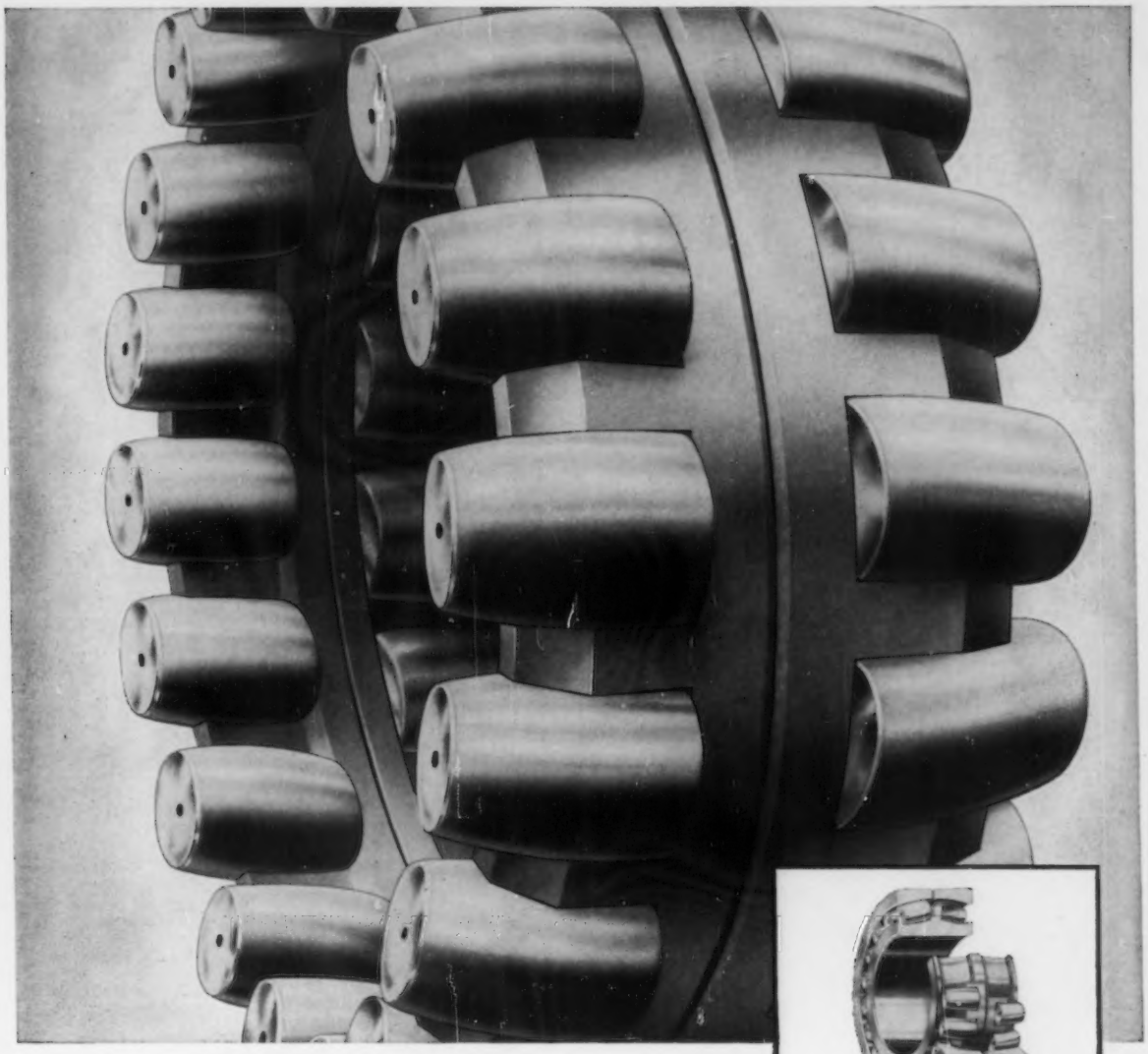

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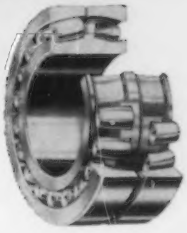

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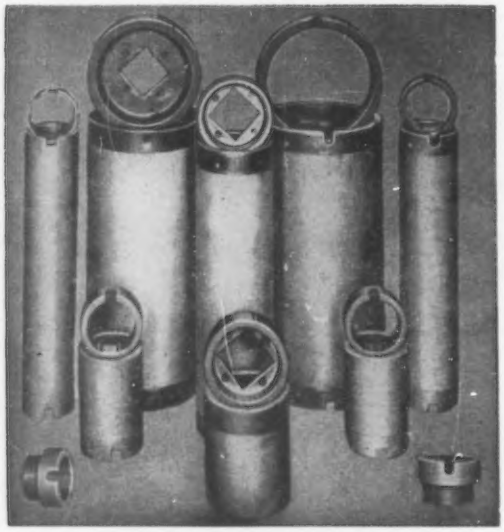

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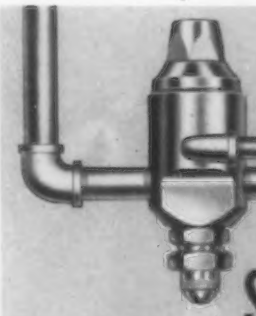

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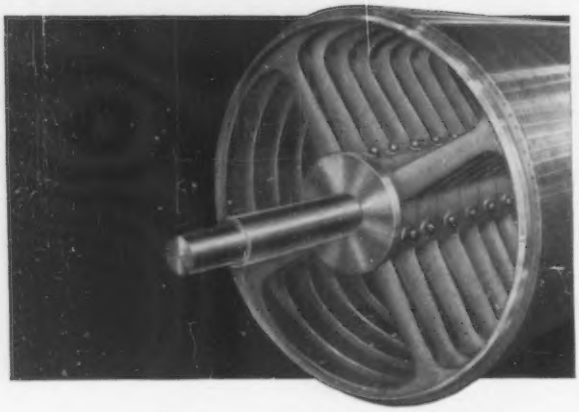

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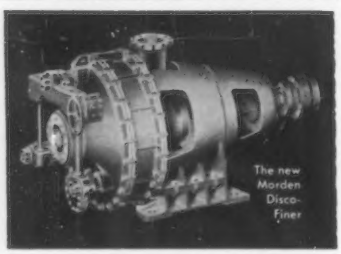

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1—Scott IP Tensile Tester.
1—Washer for 5 lb. Beater.
1—24″ Saveall, stainless steel.
1—20″ Fourdrinier Wet End & Press Section.
1—Noble & Wood Cycle Beater with motor & stand.
1—1½ lb. Valley Iron Beater.
1—5 lb. Beater.
1—Williams Freeness Tester.
7—Mullen Testers, motorized & hand operated.
1—2 qt. Auto Clave. Stainless Steel.
1—27″ High Solid Coater.
1—Noble & Wood Baby Jordan, anti-friction bearings, with 20 h.p. motor.
1—Emerson, Jr., No. 1 Jordans, anti-friction bearings.
1—24″ diameter x 24″ face Stainless Steel Cooling Drum.

METAL DETECTOR

1—Dings Metal Detector.

MISCELLANEOUS

1—Shartle Hydrafuge, 1000 g.p.m. (with motor).

PRESS ROLLS

2—Chilled iron, chrome plated 9″ x 72″.
1—Chilled iron, chrome plated 10″ x 74″.

PUMP

1—Economy Fan Pump 6000 g.p.m., 20′ head, 50 h.p. motor.

REELS

1—100″ Rice Barton 2 bowl Reel, heavy duty.
1—116″ Downingtown, 2 bowl, anti-friction bearings.
1—130″ Pope Reel (Rice Barton).

REFINERS

1—Rice Barton Dynofiner, details on request.
1—12″ Wiener Refiner, with 200 h.p. motor.
2—36″ Bauer double disc #185E Refiners, each with two 100 h.p. motors.
1—#4 Dilts Hydrafiner, anti-friction bearings.

ROLL HEADERS

1—Murray Roll Header, 40″ x 90″, complete with scales and recorder.

ROLLS

Felt, Table, Press, Breast, Couch, etc. Various sizes and types. (Bronze, Rubber, Iron, etc.)

ROTARY SCREENS

4—#2A Bird Rotary Screens, copper vats.
1—#2A—50 Bird, copper vat.
2—APMEW Rotary Pulp Screens.

SAVEALLS

1—Oliver, 10 ft. face x 5½ ft. diameter.
1—24″ Continuous Saveall, stainless steel.
1—LaMort 48″ diameter x 82″ face cylinder mold.
1—Saveall, Rice Barton, cast iron vat, cylinder mold 48″ diameter x 128″ face, complete with 18″ diameter couch roll, all in very good condition.

SHEETER

1—160″ Moore & White, simplex, complete.

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1—16″ "Swift" Paper Shredder.
2—Taylor Stiles Rag Cutters.

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1—26″ Cameron Type 26-2A, with constant tension & electric eye.
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1—42″ Cameron Type 24-3A.
1—42″ Cameron Type 40-2.
2—50″ Cameron Type 6.
1—62″ Cameron Type 6
1—72″ Cameron Type 46-W.
1—86″ Two Drum Moore & White 50″ diameter rewind.
1—96″ 4 drum Moore & White winder.

SLITTING DEVICE

84″ Quick change slitting device shear cut, complete.

SUCTION COUCH SHELL

1—Downingtown suction couch shell only. 127½″ face 26″ diameter.

SUCTION COUCH ROLL

1—Beloit, 36″ diameter x 246″ face, SKF bearings.
1—Sandusky 18″ x 144″ face.

SUCTION FELT ROLL

1—Gilbert & Nash 122″ face.

SUCTION PRESS ROLL

1—Sandusky 18″ dia. x 138″ face Suction Press Roll.

SUPER CALENDER STACK

1—7 Roll 70″ face.

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1—72″ Hudson-Sharp (Surface type winder).

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1—57″ Dayton Seybold Trimmer

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1—#4 Nash Hytor.
1—H-7 Nash.
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2—L-5 Nash
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VIBRATING SCREENS

1—Hummer Vibrating Screen, Stainless Steel.
1—Selectro, 2 Stage, 5 ft. x 10 ft.

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1—84″ IMPCO Wet Machine.

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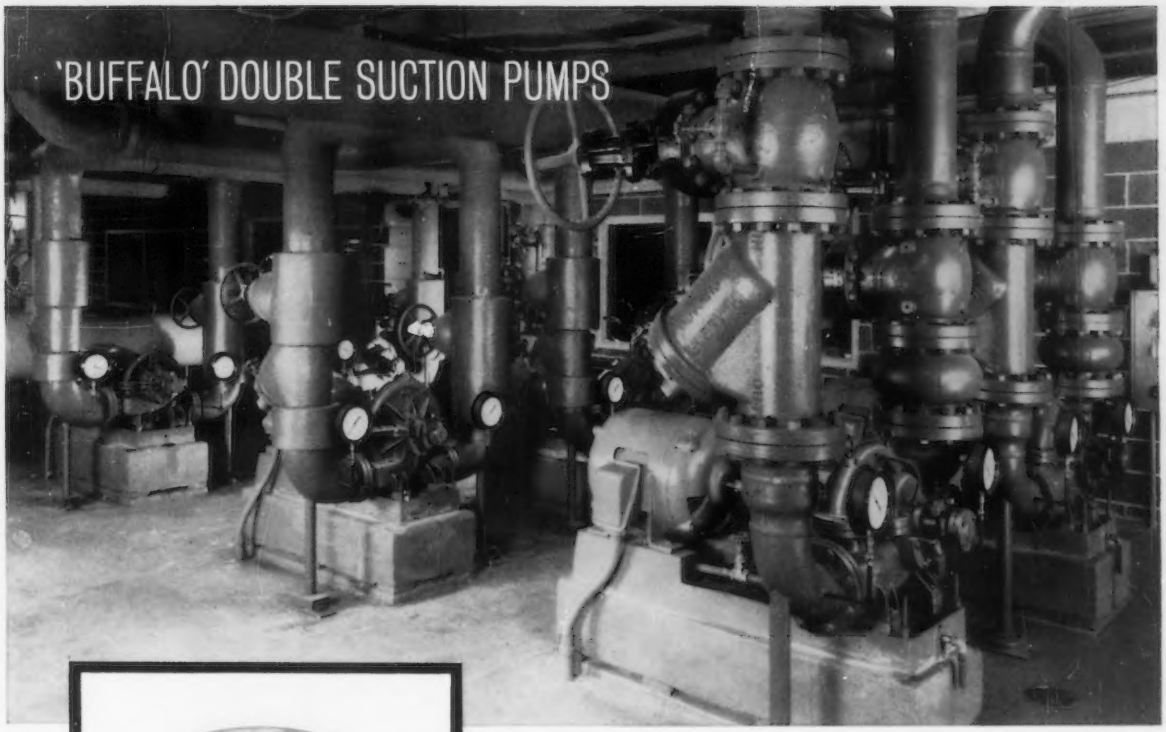

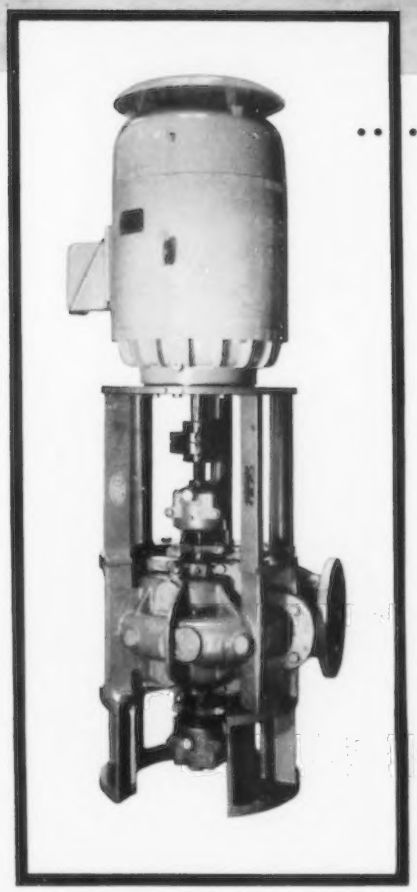

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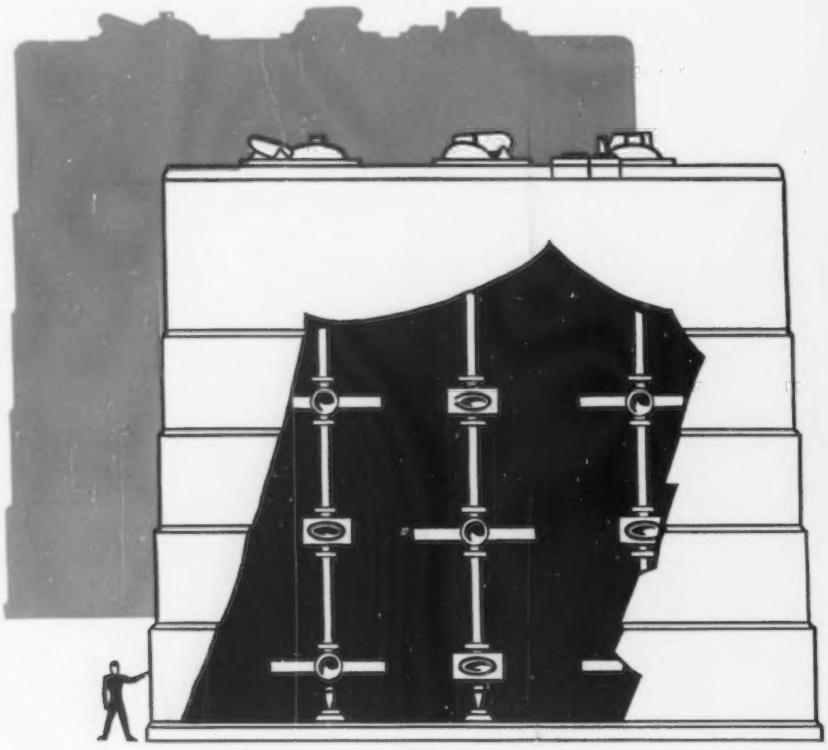

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